

**KOFAX**



## Kofax Ethernet Card Reader User Guide

September 23, 2020

Version 1.0

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## Introduction

### Purpose

This user guide provides information on the Kofax Ethernet Card Reader and is intended for imaging professionals involved in the deployment of Kofax' ControlSuite, Copitrak, Equitrac, Output Manager, and SafeCom products.

### Kofax Ethernet Card Reader

The Kofax Ethernet Card Reader is a network connected RFID reader that allows users to authenticate themselves to Kofax products using their contactless ID card, badge, tag, or key fob.

Ethernet reader features include:

- 10/100 Mbps operation with auto-MDI/MDIX
- internal switch connecting to both the network and a downstream print device
- Power-over-Ethernet (PoE) capable
- AC mains adapter for use without PoE

## Hardware versions

The Kofax Ethernet Card Reader comes in three versions:

- Multi-Card**  
 Built with an NXP chipset, the Multi-Card reader supports a wide variety of 125 kHz RFID and 13.56 MHz contactless smartcard technologies based on ISO14443 and ISO15693 standards.
- iClass and Legic**  
 Built with a LEGIC chipset, the iClass and Legic reader supports a wide variety of 13.56 MHz contactless smartcard technologies based on ISO14443 and ISO15693 standards. It can retrieve encrypted data from iCLASS (not including iCLASS SE or Seos), LEGIC Prime, and LEGIC Advant secure credentials.
- iClass Seos + Multi-Card**  
 Built with an NXP chipset, the iClass Seos + Multi-Card reader supports a wide variety of 125 kHz RFID and 13.56 MHz contactless smartcard technologies based on ISO14443 and ISO15693 standards. It contains an iCLASS SE Processor to decrypt the Physical Access Card System (PACS) data from iCLASS, iCLASS SE, and iCLASS Seos secure credentials.

Each version is identified by a unique hardware part number:

Version	Reader Part Number	Boxed Part Number
Multi-Card	Y591-EMUL-402	Y10B-EMUL-402
iClass and Legic	Y591-ELGI-402	Y10B-ELGI-402
iClass Seos + Multi-Card	Y591-EMSI-402	Y10B-EMSI-402

## Default configurations

Each version of Kofax Ethernet Card Reader has a unique configuration:

Version	Beeper	Returns
Multi-Card	Enabled	Unique ID (UID) or Card Serial Number (CSN) from all hardware supported card types
iClass and Legic	Enabled	Card Number from the Physical Access Control System (PACS) data in iCLASS cards formatted as: <ul style="list-style-type: none"> <li>• 26-bit Wiegand / H10301</li> <li>• 37-bit H10302</li> <li>• Corporate 1000 35-bit</li> <li>• Corporate 1000 48-bit</li> </ul> Unique ID (UID) from LEGIC Prime and Advant cards Other card types and formats ignored
iClass Seos + Multi-Card	Enabled	Card Number from the Physical Access Control System (PACS) data in iCLASS, iCLASS SE, or iCLASS Seos cards formatted as: <ul style="list-style-type: none"> <li>• 26-bit Wiegand / H10301</li> <li>• 37-bit H10302</li> <li>• Corporate 1000 35-bit</li> <li>• Corporate 1000 48-bit</li> </ul> Other card types and formats ignored

Readers can be configured to disable the beeper, accept only certain card types, or modify the output format. Consult the “Maintenance and configuration” section for details.

## Included items

Each Kofax Ethernet Card Reader ships with the following:

- global AC power adapter
- adapter blades for Australia, China, European Union, United Kingdom, and US/Canada
- two self-adhesive Velcro fasteners
- three cable ties and tie mounts

## Compatibility

The Kofax Ethernet Card Reader is compatible with the following products:

Product	Requirements
Kofax ControlSuite	Combined with Kofax Equitrac or Kofax Output Manager
Kofax Copitrak	Copitrak CSS 700 R2 SP2.17 or higher
Kofax Equitrac	Equitrac 5.6 or higher
Kofax Output Manager	Output Manager 4 SP2 or higher
Kofax SafeCom	SafeCom G4 Server S82 070.520*10 or higher SafeCom Device Server S82 090.090*10 or higher

## Installation

### Mounting

Mount the Kofax Ethernet Card Reader to the outside of a printer with the included self-adhesive Velcro fasteners. Use the cable ties and tie mounts to route and secure all associated cabling:

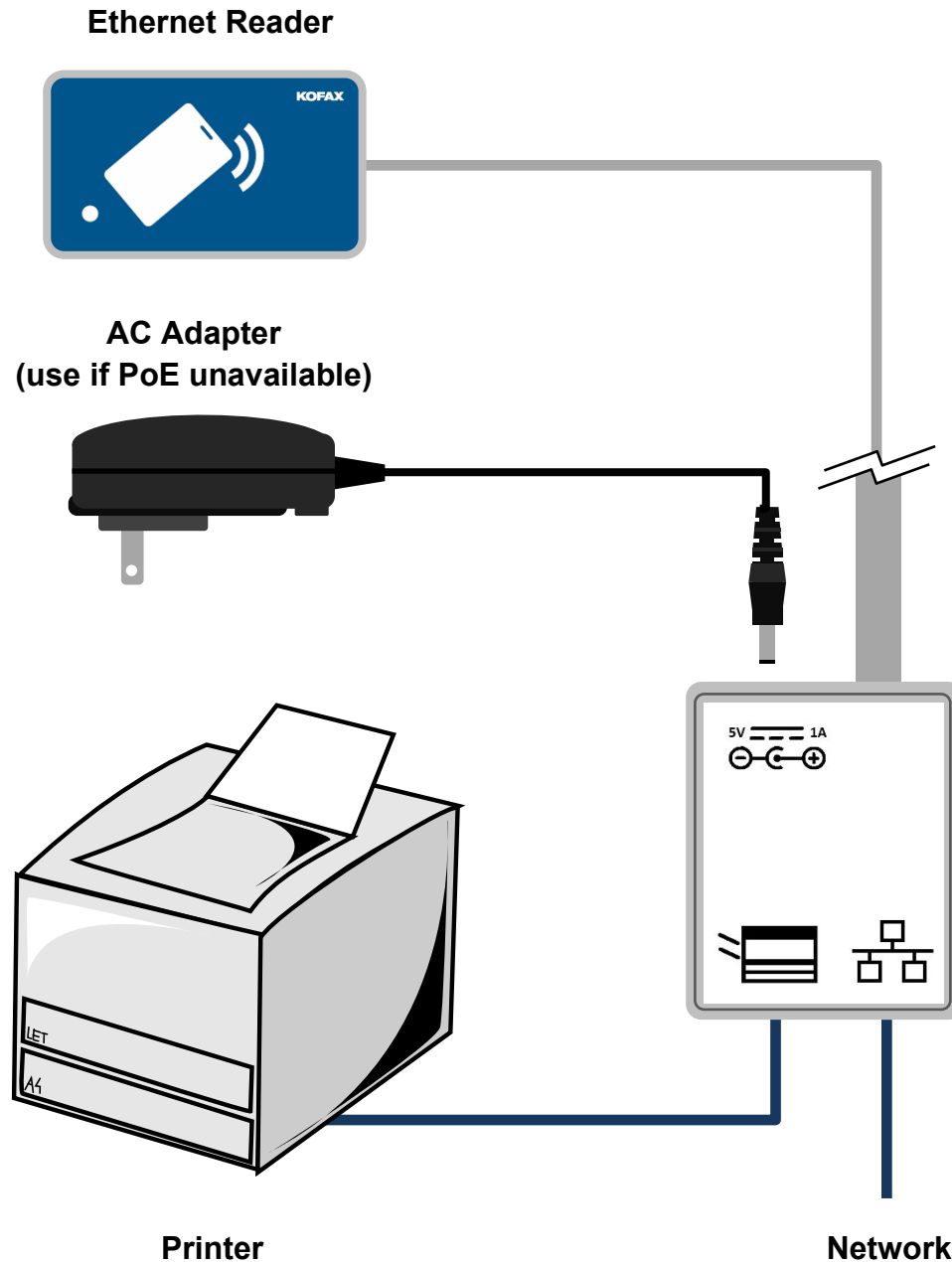


**Important:** Ensure the reader and cabling does not block any vents, trays, or access covers.



## Connecting to the network

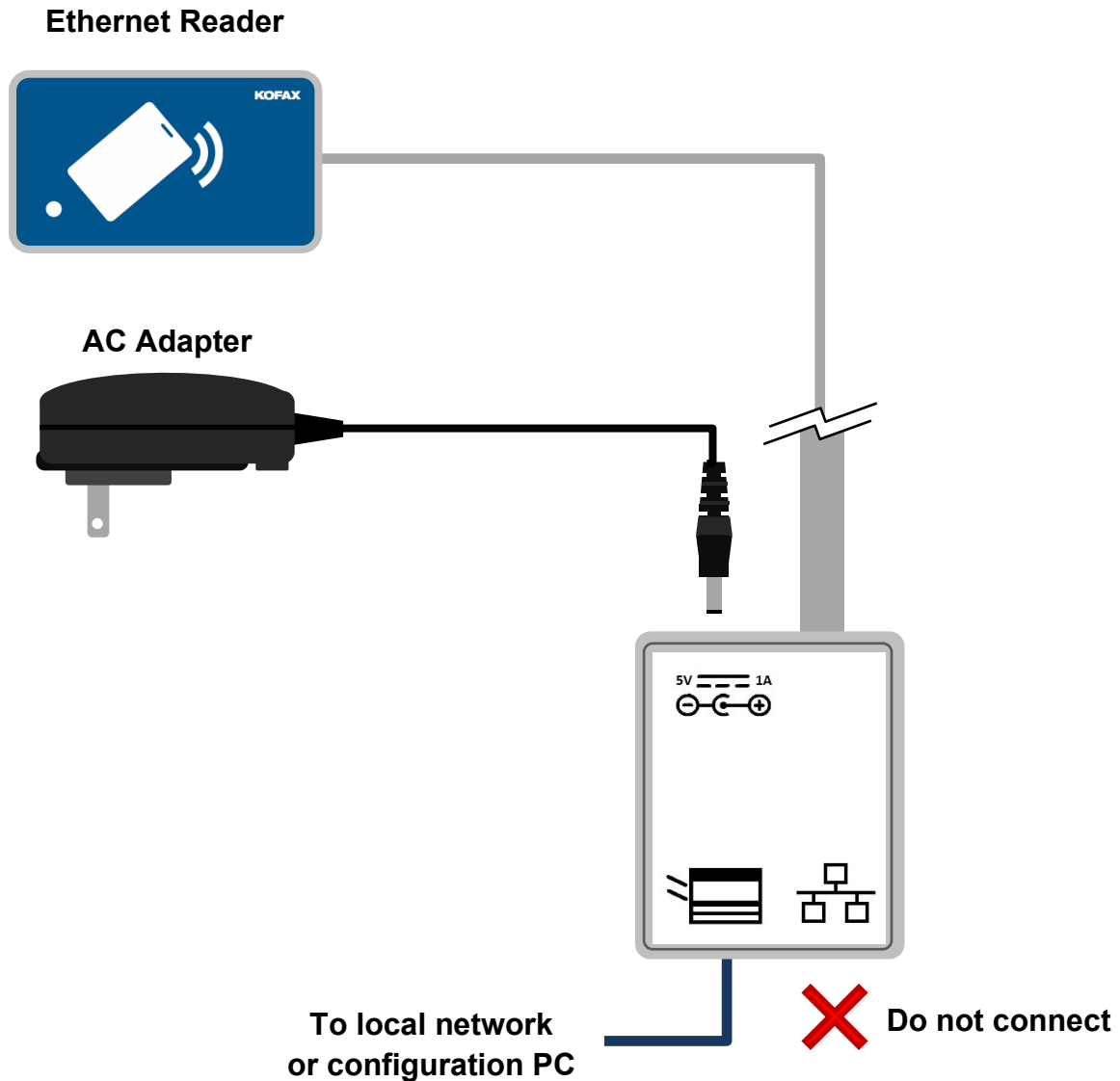
The two ports on a Kofax Ethernet Card Reader connect to an internal switch, allowing the reader and an associated print device to be serviced by a single network drop:



**Note:** The Network port supports Power over Ethernet (PoE). The AC adapter should not be used when PoE is available on the network.

Connecting in Maintenance Mode

Maintenance Mode allows point-to-point connections for testing or Factory Reset of a misconfigured reader. Physically reconfigure the reader so that only its Power and Printer port connections are used:



When in Maintenance Mode the reader LED blinks red-green-off, and the reader operates with the following temporary settings:

- DHCP addressing is enabled
- Link Local addressing (Auto IP) is enabled
- configured Static IP address is disabled
- configured Server IP and Port settings ignored
- Factory Reset by the Reader Maintainer software is always possible (lock ignored)

## Network communications

The Kofax Ethernet Card Reader uses the TCP protocol on IPv4, with each reader having a unique IPv4 address.

### IP address

The Ethernet reader uses DHCP to obtain an IP address on the network. Copitrak, Equitrac, Output Manager, and SafeCom maintain the reader-to-printer association by serial number, so it does not matter if the IP address assigned to a reader changes over time.

**Note:** Readers can be configured with a Static IP address if required, see the section “Configuring network settings” for details.

### Discovery

Ethernet reader discovery takes place several different ways:

1. Readers listen on TCP port 2939 for incoming connections. The Copitrak, Equitrac, and Output Manager products support importing from a range of IP addresses. They attempt to open TCP port 2939 on each IP address in the range, sending a generic reader command if successful. As correct responses are received, each reader in the range is identified for import and configuration.

**Note:** With SafeCom each reader’s exact IP address must be entered. These are determined by logging into the DHCP server and looking up the MAC address printed on each reader’s label. The Select Reader function in the Kofax Reader Maintainer software also provides a list of discovered reader IP addresses.

2. Right-click a print device in Equitrac and select “Discover card reader” to send a ‘magic’ UDP packet to port 2939 of the printer. An unconfigured reader listens for this packet to pass through its switch, opening the server IP and port found in the packet (typically TCP 5420) to call back for import.
3. The Select Reader function in the Reader Maintainer software sends a Service Location Protocol (SLP) broadcast to the local subnet. The Ethernet reader acts as a passive SLP service agent (speaking only when spoken to), replying to the broadcast to identify itself.

**Note:** SLP cannot bridge subnets without specific IT supports in place, so readers should be on the same subnet as the computer running the Reader Maintainer to ensure they appear in the Select Reader dialog.

## Communication

When configured by a Copitrak, Equitrac, Output Manager, or SafeCom system, the Kofax Ethernet Card Reader is programmed with a server IP and TCP port (typically 5420) used for communication.

In normal operation the reader contacts the server to report events, rather than a server maintaining connections to every reader. Reported events are:

- reader power up
- link change (network cabling change or printer sleep/wakeup)
- IP detection (the reader has determined the IP address of the device on its Printer port)
- UDP discovery (a 'magic' UDP packet was sent to the device on the Printer port)
- card presentation (a card was detected and successfully read)
- session key expired (authentication must take place to re-establish encryption)
- reset (the reader was commanded to reset by its host system)

The server responds by sending the appropriate commands to handle the event (request card data, flash the LED, and so on) then closes the connection. Readers also close connections themselves after 60 seconds without a command.

**Important:** Ethernet readers support only one connection at a time. This is enough for normal operation but may cause problems when a reader is moved to another system: As the reader attempts to connect to its old server(s) to report a power up or link change event while the new system is attempting discovery, that discovery will fail.

Best practice is to always Factory Reset an Ethernet reader on the old system before moving it to a new one.

## High availability

High availability systems configure Ethernet readers with both primary and secondary server IP and port settings.

On the first event following a reboot or power cycle, the reader attempts to connect to the primary server. If that fails, then the secondary server is contacted. Two attempts are made to each server (four in total, alternating servers) before the reader displays Host Connect Failed (3 red blinks) on its LED. Alternating attempts to connect to each server continue until reconnection is achieved.

**Note:** To provide the fastest response to new events, the reader always connects to the last server with which it communicated successfully, regardless of the server's primary or secondary designation in the reader configuration.

## Encryption

All configuration and data access commands sent to a Kofax Ethernet Card Reader must use an encrypted connection. A Public Key Infrastructure (PKI) system with certificates-based mutual authentication establishes a unique session key to encrypt the connection.

Factory certificates are used during the initial configuration of a reader. Every Copittrak, Equitrac, Output Manager, and SafeCom installation has its own system-specific root certificate. When adding an Ethernet reader to the system, the reader creates a unique private certificate signed by the root, locking the reader to prevent access by all other systems and tools.

It takes 20 seconds to authenticate with a reader and establish the session key, so the key is cached by both reader and server for fast reconnection in response to events. During authentication, the server sets a timeout for the reader to expire the session key at 2:00 a.m. local time, applying random variations to prevent all readers from re-authenticating at once.

Readers store their session key in volatile memory only, so when powered up or reset a reader contacts its configured server to reauthenticate and establish a new key.

**Note:** While the Transport Layer Security (TLS) protocol typically used to encrypt TCP connections works on the same principles, TLS supports multiple certificate schemes, authentication methods, and encryption algorithms; with high processor and storage overheads unsuitable to the Ethernet reader's embedded CPU. Instead, the reader uses a proprietary protocol based on established public algorithms: X.509 certificates (PKIX) are authenticated by the Elliptic Curve Digital Signature Algorithm (ECDSA), with Elliptic Curve Diffie-Hellman (ECDH) establishing an Advanced Encryption Standard (AES) session key.

All Kofax systems use the OpenSSL library for Ethernet reader authentication and encryption.

## Factory Reset

An Ethernet reader must be Factory Reset before moving it to a new system. This process:

- erases all network settings
- unlocks the reader by erasing the system-specific private certificate
- restores the reader settings and configuration to the originals written at the factory

**Note:** The firmware on a reader is unaffected by a Factory Reset: A reader with upgraded firmware remains upgraded after performing the reset.

The Factory Reset command must be sent to an Ethernet reader by the system which locked it, or by placing the reader in Maintenance Mode when the locking system's root certificate is lost or inaccessible. The reader's cabling must be physically reconfigured to place it into Maintenance Mode, refer to the section "Connecting in Maintenance Mode".

## Usage

### Presenting cards

Cards should be placed and held within approximately 1/4 inch (6 mm) of the Kofax Ethernet Card Reader until a successful read is indicated by the LED or beeper.

Moving or 'swiping' the card across the reader like a traditional magnetic stripe card can disrupt the RFID link and should be avoided.

### Beeper

An Ethernet reader which has successfully authenticated and established a session key with its host system beeps each time a card is read. The beeper is disabled by configuring the reader in Silent mode, but its volume is not adjustable. Refer to the section "Setting the operating mode" for details.

**Note:** The beeper always sounds when an Ethernet reader is powered up or reset, to draw attention to any tampering.

## LED indicator

The LED in the Kofax Ethernet Card Reader is active whenever the reader has power. Offline indications are displayed automatically by the reader itself, while Online indications are commanded by its host system.

### Offline indications

An Ethernet reader is Offline when communications with its host system have failed or the reader has yet to be configured. Offline status is communicated with brief flashes (blinks) of the LED, followed by 2 seconds with the LED off before the blinks repeat:

Indication	Status	Description
1 green blink	Network linked	The Network port has an Ethernet link, but the reader has not yet obtained an IP address.
2 green blinks	Searching for host	The reader has a valid IP address and is either attempting to contact its server(s) or is not yet configured.
1 red blink	No links	Cables are disconnected at one end or the other, or the reader is configured with rate and duplex settings incompatible with the local network.
2 red blinks	UDP connect failed	The reader could not connect to the server indicated in the 'magic' UDP packet sent to the printer.
3 red blinks	Host connect failed	The reader is unable to contact its configured server.
4 red blinks	IP address conflict	Another device on the network is using the IP address assigned to the reader.
Red blink, green blink	Maintenance mode	There is a link on the Printer port only. If this is unintentional then either the local network is down, or the reader is configured with incompatible Network rate and duplex settings.

## Online indications

Once a configured Ethernet reader has successfully contacted its host system, the system commands the LED to one of the following indications:

Indication	Status	Description
Solid red	Idle	No user logged in, waiting for card presentation
Slow flashing red	Not ready	A system problem has occurred (misconfiguration, no printer association, and so on)
Solid green	Session active	A user is logged in to perform tasks
Slow flashing green	Authenticating card	The system is looking up the user
Fast flashing red	Unknown user	The presented card did not match a known user
Fast flashing green	No print jobs	The user has no print jobs queued for release
Alternating red/green	Insufficient funds	The user account balance is too low to release the job

**Note:** Some systems use only a subset of these indications, consult the appropriate Kofax product documentation for details.



## Maintenance and configuration

Kofax Ethernet Card Readers are configurable to:

- select DHCP addressing or assign a static IP
- set a fixed network speed and duplex combination
- select an operating mode compatible with the target use case
- restrict operation to certain card technologies
- adapt the reader to specific customer card system requirements
- update the firmware to support new card types or features

Readers are configured with the Reader Maintainer software, available at [delivery.kofax.com](https://delivery.kofax.com).

**Note:** Equitrac System Manager, Output Manager Console, and the Copittrak Ethernet Reader Controller Service can factory reset, configure, or update the firmware on a fleet of Ethernet readers in a single operation. This is more efficient than updating individual readers one at a time with the Reader Maintainer. Consult appropriate Kofax product documentation for details.

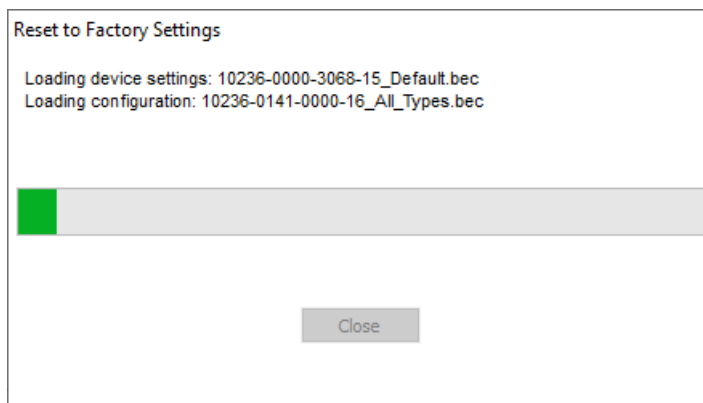
## Factory resetting in Maintenance Mode

The Reader Maintainer (RM) software is used to Factory Reset a locked Ethernet reader:

1. Launch the RM software and click Select Reader.
2. Connect the Ethernet reader to its power supply, then connect its Printer port directly to the computer running the RM. This puts the reader in Maintenance Mode, giving it an Auto IP address. A computer set for DHCP establishes an Auto IP of its own after a 2-minute timeout period, after which the reader is visible to it.

**Tip:** Assign the computer a static IP of 169.254.1.1 with subnet mask 255.255.0.0 before connecting the reader to eliminate the timeout.

3. Click the reader serial number when it appears in the list, then click Select.
4. Click Factory Reset, then Yes at the confirmation prompt.
5. When informed that the reader will reboot following reset, click OK.
6. If the RM has newer firmware or configurations than those found in the reader after the reset, then you are prompted to upgrade. If you click Yes, a progress dialog appears:



The RM reauthenticates with the reader at least once during this process, taking about 20 seconds each time.

7. Click Close to return to the RM's main window.

## Configuring network settings

Some networks require pre-configuration of the Ethernet reader with a Static IP or fixed port speed and duplex prior to connection.

The Reader Maintainer (RM) software is used to pre-configure the network settings:

1. Launch the RM software and click Select Reader.
2. Connect the Ethernet reader to its power supply, then connect its Printer port directly to the computer running the RM. This puts the reader in Maintenance Mode, giving it an Auto IP address. A computer set for DHCP establishes an Auto IP of its own after a 2-minute timeout period, after which the reader is visible to it.

**Tip:** Assign the computer a static IP of 169.254.1.1 with subnet mask 255.255.0.0 before connecting the reader to eliminate the timeout.

3. Click the reader serial number when it appears in the list, then click Select.
4. Click Configure Network Settings. The RM takes about 20 seconds to authenticate with the reader and establish an encrypted connection.
5. Select the desired settings, completing all four fields if assigning a Static IP:

**Note:** Readers must have hotfix firmware 1096 2.30.05 or higher to enable configuration of the Printer port.

6. Click Update Reader, then Yes when prompted to proceed.
7. When the reboot prompt appears, click OK.
8. The RM reauthenticates with the reader, then focus returns to the main window.
9. If configuring multiple readers, repeat from step 2 for each additional reader.

**Note:** The RM remembers the last settings used, with the Static IP incremented by 1 after each successful Update Reader operation.

Setting the operating mode

The Kofax Ethernet Card Reader ships from the factory with the beeper enabled and data output in decimal format (octal for HID Prox cards). For compatibility with older USB readers in a mixed fleet however, the reader can be set to an alternate mode.

The Reader Maintainer (RM) software configures the operating mode:

1. Launch the RM software and click Select Reader.
2. Connect the reader to the same network subnet as the computer running the RM.
3. Click the reader serial number when it appears in the list, then click Select.
4. Click Customize Reader. The RM takes about 20 seconds to authenticate with the reader and establish an encrypted connection.
5. Select the desired Mode:



Mode	Beeper	Output Format
Default	Enabled	Decimal, octal for HID Prox cards
Silent	Disabled	Decimal, octal for HID Prox cards
MX Compatible	Enabled	Compatible with Kofax MX card readers for SafeCom

**Note:** Silent mode is compatible with the Copitrak ID and Equitrac ID card readers.

6. Click Update Reader, then Yes, and wait for the progress bar to complete. The RM reauthenticates with the reader at least once during this process.
7. Close the dialog and use the Read Card Number function to test the reader.

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

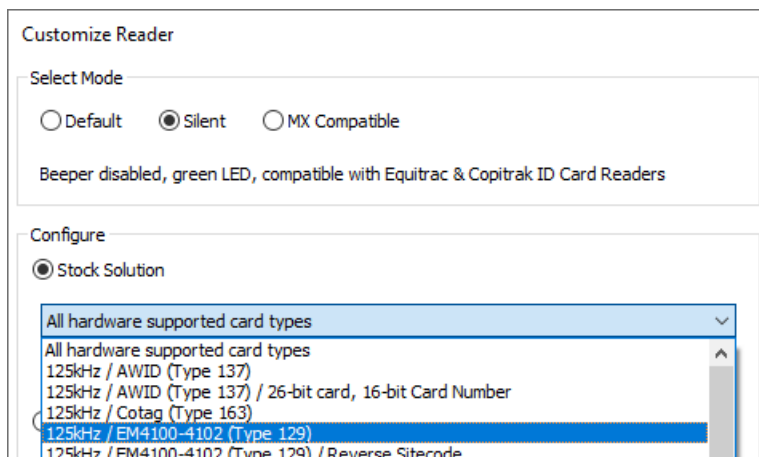
The Reader Maintainer is distributed with Reader Settings .bec files corresponding to the Mode selections in the Customize Reader dialog. Equitrac System Manager, Output Manager Console, and the Copitrak Ethernet Reader Controller Service can centrally push a .bec file to all Ethernet readers in a fleet for significant time and labor savings. A Reader Settings .bec push *must* be followed by a Stock Solution .bec push to restore card reading functionality. Consult the appropriate product documentation for details.

Restricting operation to certain card types

Kofax Ethernet 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 failed authentications from these other credentials.

The Reader Maintainer (RM) software can restrict a reader to the desired card type:

1. Launch the RM software and click Select Reader.
2. Connect the reader to the same network subnet as the computer running the RM.
3. Click the reader serial number when it appears in the list, then click Select.
4. Click Customize Reader. The RM takes about 20 seconds to authenticate with the reader and establish an encrypted connection.
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. Click Update Reader, then Yes, and wait for the progress bar to complete. The RM reauthenticates with the reader at least once during this process.
7. Close the dialog and use the Read Card Number function to test the reader.

The Reader Maintainer is distributed with Stock Solutions .bec files corresponding to the selections in the Customize Reader dialog. Equitrac System Manager, Output Manager Console, and the Copittrak Ethernet Reader Controller Service can centrally push a .bec file to all Ethernet readers in a fleet for significant time and labor savings. Consult the appropriate product documentation for details.

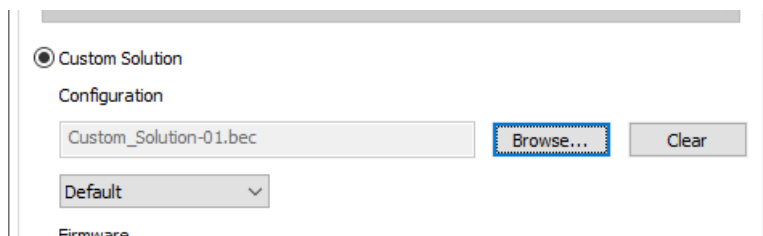
## Loading a custom configuration file

It may be necessary to configure a Kofax Ethernet 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 card data in formats matching a pre-existing user database

Customizations are created by Kofax Support and distributed as .bec files. These files can be loaded with the Reader Maintainer (RM) software:

1. Launch the RM software and click Select Reader.
2. Connect the reader to the same network subnet as the computer running the RM.
3. Click the reader serial number when it appears in the list, then click Select.
4. Click Customize Reader. The RM takes about 20 seconds to authenticate with the reader and establish an encrypted connection.
5. Click the Custom Solution button.
6. Click Browse... then navigate to and Open the desired .bec file:



7. If alternate firmware is provided, the .bf2 file is also selected at this time.
8. Click Update Reader, then Yes, and wait for the progress bar to complete. The RM reauthenticates with the reader at least once during this process.
9. Close the dialog and use the Read Card Number function to test the reader.

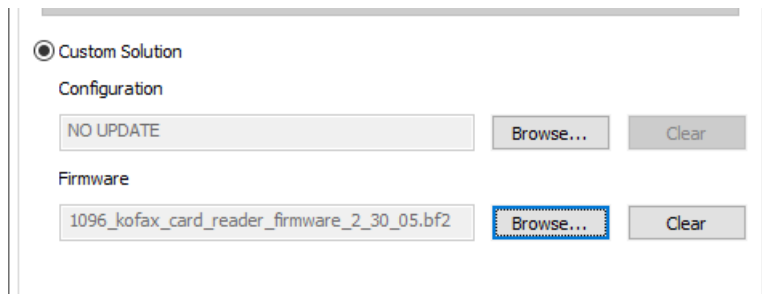
Equitrac System Manager, Output Manager Console, and the Copitrak Ethernet Reader Controller Service can centrally push .bec and .bf2 files to all Ethernet readers in a fleet for significant time and labor savings. Consult the appropriate product documentation for details.

## Updating reader firmware

A Kofax Ethernet Card Reader may require updated firmware to add support for new card types or customization features. Reader firmware is distributed as a .bf2 file.

The Reader Maintainer (RM) software can be used to update reader firmware:

1. Launch the RM software and click Select Reader.
2. Connect the reader to the same network subnet as the computer running the RM.
3. Click the reader serial number when it appears in the list, then click Select.
4. Click Customize Reader. The RM takes about 20 seconds to authenticate with the reader and establish an encrypted connection.
5. Click the Custom Solution button.
6. Click Browse... then navigate to and Open the desired .bf2 file:



7. If the new firmware is part of a customization, the associated .bec file can also be selected at this time.
8. Click Update Reader, then Yes, and wait for the progress bar to complete. The RM reauthenticates with the reader at least once during this process.
9. Close the dialog and use the Read Card Number function to test the reader.

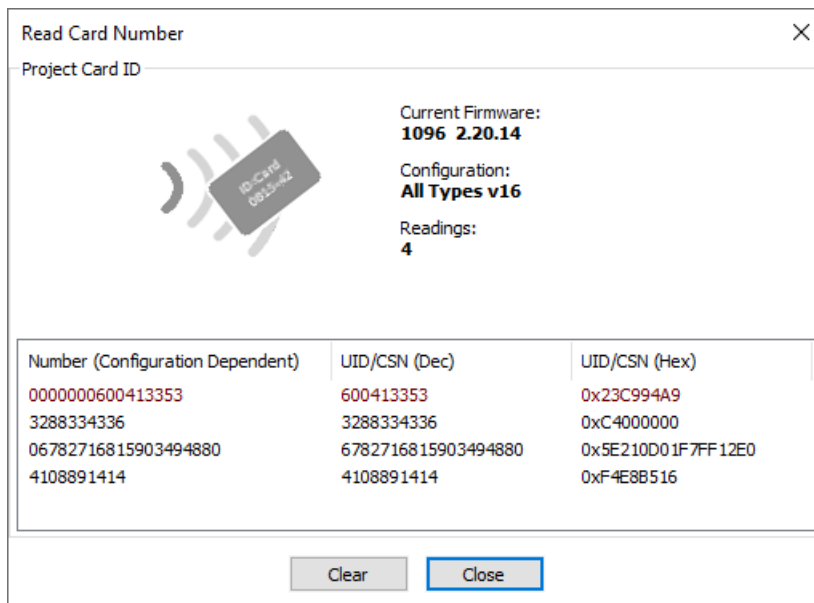
Equitrac System Manager, Output Manager Console, and the Copitrak Ethernet Reader Controller Service can centrally push .bf2 and .bec files to all Ethernet readers in a fleet for significant time and labor savings. Consult the appropriate product documentation for details.

**Card Testing**

**Reading card numbers**

The Reader Maintainer (RM) software shows the output from a Kofax Ethernet Card Reader:

1. Launch the RM software and click Select Reader.
2. Connect the reader to the same network subnet as the computer running the RM.
3. Click the reader serial number when it appears in the list, then click Select.
4. Click Read Card Number. The RM takes about 20 seconds to authenticate with the reader and establish an encrypted connection.
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.

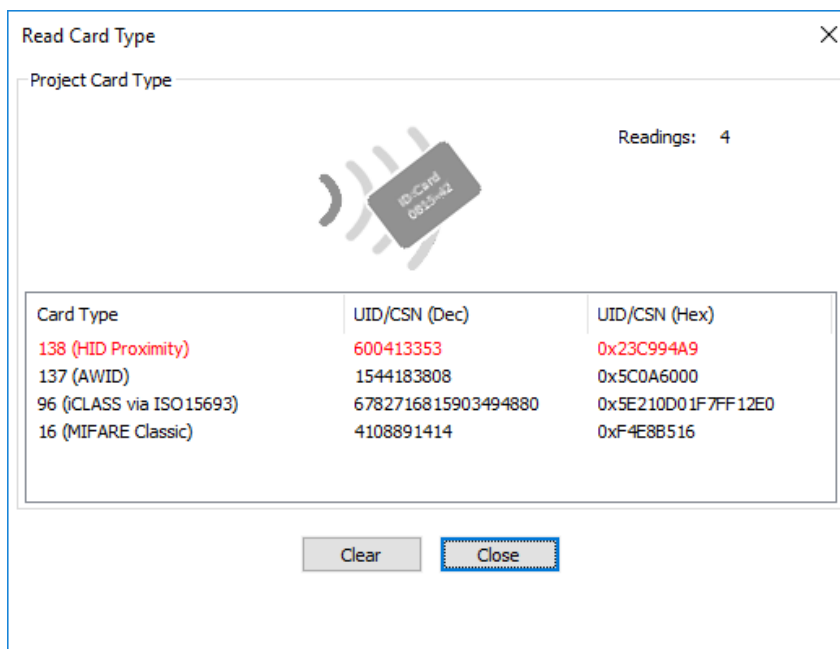
**Note:** The Read Card Number function shows the *output* from a card, the Read Card Type function shows the *type* of card you have.



Reading card types

The Reader Maintainer (RM) software is used to read the card type:

1. Launch the RM software and click Select Reader.
2. Connect the reader to the same network subnet as the computer running the RM.
3. Click the reader serial number when it appears in the list, then click Select.
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. The RM takes about 20 seconds to authenticate with the reader and establish an encrypted connection.
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

### Reader not responding, LED off

**Condition**

There is no response to card presentations and the Ethernet reader's LED is off.

**Cause**

The reader has no power.

**Remedy**

Connect the reader's Network jack to a port with available Power over Ethernet (PoE) or use its AC adapter.

### Configuration fails after discovery and import

**Condition**

A new or freshly factory reset Ethernet reader fails to complete configuration after discovery and import. Its LED may show 3 red blinks.

**Cause**

The reader cannot contact its configured server. The reader opens a port on the server (typically TCP port 5420) to report events such as a power up, link change, card read, and the reset following configuration. If this is blocked by a misconfigured firewall or virtual machine environment, then configuration cannot complete.

**Remedy**

Determine the cause of the blockage and ensure the reader can open the necessary port. The reader may require a Factory Reset before attempting to import and configure it again, see the section "Factory resetting in Maintenance Mode" for details.

### Reader remains locked after Factory Reset

**Condition**

An Ethernet reader that was Factory Reset by Equitrac System Manager or Output Manager Console cannot be configured and is still locked when viewed in the Reader Maintainer.

**Cause**

Clicking OK in the Equitrac System Manager or Output Manger Console interface summary window writes the displayed settings to the selected readers, re-locking them if OK is used to close the window after a Factory Reset.

**Remedy**

When using Equitrac System Manager or the Output Manager Console to perform a factory reset, click Cancel instead of OK to close the interface summary window.

## Reader stops functioning after server is moved or changed

### **Condition**

An Ethernet reader that was working well as part of a system stops working after a server is moved or changed. The reader LED shows 3 red blinks.

### **Cause 1**

The server IP address has changed, and the reader can no longer contact it to report events (power up, link change, card read, and so on).

### **Remedy 1a**

Set the server back to its original IP. If this can only be done on a temporary basis, do so, select all readers in the fleet, configure them with the new server IP, then move the server to the new address. This may not be possible with all Kofax products.

### **Remedy 1b**

The reader must be deleted from the system, Factory Reset, then discovered, imported, and configured again. Refer to the section “Factory resetting in Maintenance Mode” for details.

### **Cause 2**

The reader cannot contact the server. The reader opens a port on the server (typically TCP port 5420) to report events (power up, link change, card read, and so on). This may be blocked by a misconfigured firewall or virtual machine environment.

### **Remedy 2**

Determine the cause of the blockage and ensure the reader can open the necessary port.

### **Cause 3**

The system’s root certificate has changed, and the reader can no longer authenticate to establish an encrypted connection.

### **Remedy 3**

The reader must be deleted from the system, Factory Reset, then discovered, imported, and configured again. Refer to the section “Factory resetting in Maintenance Mode” for details.

## Card not detected by reader

### **Condition**

The Ethernet reader does not respond (beep, LED change, or system action) when a card is presented.

### **Cause 1**

The reader is offline.

### **Remedy 1**

Check if the reader LED shows an offline indication. If so, determine and rectify the cause of the offline. Refer to the section “Offline indications” for details.

### **Cause 2**

The reader is loaded with an incompatible configuration.

### **Remedy 2**

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 3**

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

### **Remedy 3**

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 is randomizing its UID and some other data must be retrieved for authentication.

Contact Kofax Support to obtain a solution for your card type.

### **Cause 4**

The card is incompatible with the reader hardware.

### **Remedy 4**

It may be possible to develop a custom solution for the target card system. Contact Kofax Support for assistance.

## Technical Reference

### Low frequency (125/134 kHz) card support

Card System	Multi-Card	iClass and Legic	iClass Seos + Multi-Card
AWID	Yes	No low frequency card support	Yes, 1
Cardax	No, 3		No, 3
Cotag	No		No
Deister	Yes		Yes, 1
EM 4100/4102	Yes		Yes, 1
EM 4205/4305	Yes		Yes, 1
EM 4450/4550, 4469/4569	Yes		Yes, 1
FDX-B	No, 3		No, 3
G-Prox	Yes		Yes, 1
HID Indala ASP	Yes		Yes, 1
HID Indala ASP+	Yes, 2		Yes, 1, 2
HID Prox	Yes		Yes, 1
Hitag 1/2 (256, 2048)	Yes		Yes, 1
Hitag S	Yes		Yes, 1
Honeywell Nexwatch Quadrakey	Yes		Yes, 1
IDTECH	Yes		Yes, 1
ioProx	Yes		Yes, 1
Keri	Yes		Yes, 1
Miro	Yes		Yes, 1
Pyramid / Farpointe Data	Yes		Yes, 1
Q5	No, 3		No, 3
Radio Key / SecuraKey	Yes		Yes, 1
Sokymat Unique	Yes		Yes, 1
T5567/T5557	No, 3		No, 3
Tiris	No, 3		No, 3
Titan	No, 3		No, 3
Zodiac	No, 3		No, 3

1. Disabled by default. Configure the reader using the “All hardware supported types” or desired single card type Stock Solution to enable support.
2. Raw data stream or hash value only. The reader output can be added to the user database as an alternate PIN by the system administrator. There is no direct relationship to any number printed on the card or stored in the access control system database.
3. Support possible but not compatible as shipped. Contact your Kofax Sales Representative.

## High frequency (13.56 MHz) card support

Card System	Multi-Card	iClass and Legic	iClass Seos + Multi-Card
Calypso	Yes	Yes, 1	Yes, 1
CEPAS	Yes	Yes, 1	Yes, 1
EM 4033/4035	Yes	Yes, 1	Yes, 1
HID iCLASS	Yes, 2, 5	Yes	Yes
HID iCLASS SE	Yes, 2, 5	Yes, 1, 2, 4	Yes
HID iCLASS Seos	Yes, 2, 3, 5	Yes, 1, 2, 3, 4	Yes
Infineon my-d vicinity	Yes	Yes, 1	Yes, 1
LEGIC Advant	Yes, 2, 4	Yes	Yes, 1, 2, 4
LEGIC Prime	No	Yes	No
Mifare Classic	Yes	Yes, 1	Yes, 1
Mifare DESfire, -EV1 (2K, 4K, 8K)	Yes	Yes, 1	Yes, 1
Mifare Plus (-S, -X, L1, L2, L3)	Yes	Yes, 1	Yes, 1
Mifare Ultralight, -C	Yes	Yes, 1	Yes, 1
Moneo	Yes	Yes, 1	Yes, 1
NFC Forum Tag 1-4	Yes	Yes, 1	Yes, 1
NXP iCode	Yes	Yes, 1	Yes, 1
NXP SmartMX, ProX	Yes	Yes, 1	Yes, 1
Pay Pass	Yes	Yes, 1	Yes, 1
Pico Pass	Yes	Yes, 1	Yes, 1
SLE44R35	Yes	Yes, 1	Yes, 1
SLE66Rxx (my-d move)	Yes	Yes, 1	Yes, 1
Sony FeliCa	Yes, 5	Yes, 1, 4	Yes, 1, 5
SRI4K, SRIX4K	Yes	Yes, 1	Yes, 1
SRI512, SRT512	Yes	Yes, 1	Yes, 1
Tag-it ISO	Yes	Yes, 1	Yes, 1

1. Disabled by default. Configure the reader using the “All hardware supported types” or desired single card type Stock Solution to enable support.
2. Unique ID (UID) only. The reader output can be added to the user database as an alternate PIN by the system administrator. There is no direct relationship to any number printed on the card or stored in the access control system database.
3. iCLASS Seos UIDs are returned only from Seos cards ordered with UID randomization turned off, as randomized UIDs cannot be used for user identification.
4. Access to encrypted data not possible.
5. Access to encrypted data requires installation of a third-party Secure Access Module (SAM).

## Specifications

Parameter	Multi-Card	iClass and Legic	iClass Seos + Multi-Card
Network interface	2x 10/100 Fast Ethernet port		
Network switch	Self-learning, 3-port (network, printer, reader)		
Network port rate & duplex	Auto (default), 100 Mbit full, 100 Mbit half, 10 Mbit full, 10Mbit half		
Printer port rate & duplex <sup>1</sup>	Auto (default), 100 Mbit full, 100 Mbit half, 10 Mbit full, 10Mbit half, disabled		
Spanning tree support	No		
Protocols	IPv4, ARP, TCP, UDP, ICMP (ping only), IGMP v1, DNS (client, UDP only), DHCP (client, Vendor Class Identifier = "Baltech Proxreader"), SLP v2 (service agent, passive, UDP only, scope=BALTECH, service=service:x-proxreader)		
IP address assignment	DHCP (default), static, link-local		
Encryption	PKIX (X.509 ECDH, ECDSA)		
Power-over-Ethernet (PoE)	802.3af, Power Class 1		
PoE consumption (average)	3.1 W	2.8 W	3.1 W
DC input	5 VDC		
DC current (average)	420 mA	385 mA	420 mA
DC current (max)	500 mA	460 mA	525 mA
Adapter voltage	90 to 240 VAC		
Adapter frequency	47 to 63 Hz		
Adapter current (max)	300 mA		
Adapter efficiency	Level VI		
Adapter blades	AUS, CHIN, EU, UK, US		

1. Readers must have hotfix firmware 1096 2.30.05 or higher to enable configuration of the Printer port.