Iris ID

Architectual & Engineering Specification – Detailed

For iCAM7000 & iCAM7100 Camera Units

Ver 1.05.02

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Table of Contents

1. Description

1.1 Scope and Purpose of this Document

This document shall include a general description of the iCAM7000 series product and information about its manufacturer. It shall also include the iCAM7000 series mechanical specifications, specific features, and servers, workstations, as well as software requirements.

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The information in this document is provided "as is" and is subject to change at any time regardless of product cycle status.

1.2 General Description

The iCAM7000 Series cameras are available in two model types series:

- The iCAM7000 model series cameras are the base model with only the option for a built-in card reader.

- The iCAM7100 model series cameras have a LCD touch-screen, six function keys, and other enhancements in addition to the option for a built-in card reader.

All iCAM7000 series cameras contain an intuitive and easy to operate user interface designed around an optical system containing an integrated high-speed multi-sensor iris imager array. The iCAM7000 series is capable of processing and outputting high quality ISO standards compliant iris images of a subject in less than one second.

The iCAM7000 series also contains a 5MP CMOS face camera with flash, a front panel multi-color LED status indicator, voice/sound prompt indication, and motorized tilt adjustment.

The ICAM7000 series has shall have a modular design and shall be easy to maintain.

iCAM7000 Series Hardware Product	
LCD Display <u>Not</u> Included	
iCAM7000	Iris Camera – Dual Iris recognition camera, TCP/IP enabled, embedded 5MP face camera with flash. (Base Model)
iCAM7010-U1	Iris Camera – iCAM7000 with built-in Omnikey smart card reader/writer (HID iCLASS, MiFare, 13.56 Mhz cards)
LCD Display Included	
iCAM7101	Iris Camera – iCAM7000 with 4.3" color touch screen LCD display
iCAM7111-U1	Iris Camera – iCAM7101 with built-in Omnikey smart card reader/writer (HID iCLASS, MiFare, 13.56 Mhz cards)

2. Products

The iCAM7000 series shall provide an identification or verification of a live iris with a stored biometric template. The iCAM7000 series shall prevent unauthorized access from lost, stolen or copied passwords, credentials, and access cards by requiring the live authentication of a user's iris against a stored biometric record.

The iCAM7000 series shall provide, the ability to use internal iris matching in either 1:N or 1:1 (with use of card or pin). At the time of purchase the iCAM7000 Series shall have the following options available iCLASS, MIFARE, 13.56 Mhz, 125 Khz Prox, or pop up pin-pad.

1. The ICAM7000 series shall allow:

   a. Enrollment:
      i. Consisting of capturing, processing, and storing a user's biometric data in a 512 byte encrypted biometric record. If the unit contains an embedded card reader, it will provide a means to encode the supported card credential(s) with biometric record data if the card credential(s) supports such actions.

   b. Authentication:
      i. The 1:N mode shall support single factor authentication via the presentation of a user's live iris evaluated against the on-board database of biometric records.
      ii. The 1:1 verification shall support two factor authentication via the use of a PIN or card activation of the biometric record, then real-time evaluation of the presented iris against the stored biometric record.
      iii. The 1:1 verification shall support three factor authentication via the use of a card and iris authentication, plus PIN credential activation of the biometric

record. *Must be used with a PACS (Physical Access Control System) for three factor authentication to be achieved.

   c. Verification:

      i. Successful verification will result in either the activation of a single door relay or the output of Wiegand data to an access control panel as previously configured by the administrator.

The iCAM7000 series shall ship with a hardware guide manual and L wrench. The Entry Access Control (EAC) software is purchased separately and is required for most installations. The EAC software will provide the administrator with a means to remotely manage the unit via networking protocols. The EAC software will provide a means to centrally store biometric records via the use of a central server. The software will allow multiple client applications pointing to a single central server. The EAC software will operate in either a MS Access, Microsoft SQL Server 2005 or Oracle 9i Database.

  2. The iCAM7000 series shall have available an iData Tool Kit, DB API, and Option 3 API, for the use of developer(s) to integrate the iCAM7000 solution into a Physical Access Control (PAC) solution.

2.1 Manufacturer

The iCAM7000 series shall be the Advanced Multifactor Biometric Iris reader and shall be provided by Iris ID Systems, Inc. with a principal office at 7 Clarke Dr., Cranbury, NJ 08512.

2.2 Mechanical Specifications

The iCAM7000 series shall be the Advanced Multifactor Biometric Iris reader and shall be provided by Iris ID Systems, Inc. with a principal office at 7 Clarke Dr., Cranbury, NJ 08512.

  1. Dimensions
The iCAM7000 series iris reader dimensions shall be 7.01" (178 mm) wide x 8.31" (211 mm) high x 2.52" (64 mm) deep (For CAD drawing see link in Appendix). The iris reader will ship assembled and shall be comprised of:
    1) A wall plate that mounts directly to a wall.
    2) An iCAM7000 series security screw.
    3) An iCAM7000 series quick start guide.
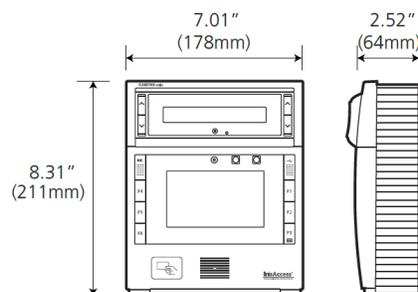
  2.   Mounting Height
Below is the recommended mounting height for the iCAM7000 Series.
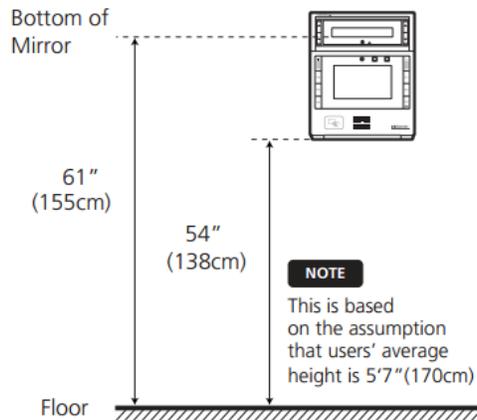
3. **Color & Logo**
   1) The iCAM7000 series color shall use one shade of light gray.
      a. The ICAM7000 series, "Iris ID Systems" logo shall be located at the front of the iCAM7000 series casing and shall be light gray.
   2) The Iris ID Systems logo shall be a proof of authenticity of the iCAM7000 series.

4. **Weight**
   The iCAM7000 series shall weigh 3.5 lbs (1.6 kg) assembled (packaged weight for shipping shall be 4.0 lbs (1.8 kg).

5. **Certifications**
   The iCAM7000 series shall be FCC, CE, UL294, and RoHS certified.

6. **Temperature & Environment**
   1) The ICAM7000 series shall be operational within a temperature range of 32° to 113°F (0° to 45°C).
   2) The iCAM7000 series will operate indoors only and shall not be deployed to outdoor locations without the use of an outdoor NEMA box enclosure and not be exposed to direct sunlight.
   3) The iCAM7000 series will operate in 0-90% non-condensing humidity.

2.3 Common Features

1. **Power**
   A. The iCAM7000 series will allow for an external power supply 'brick' with an attached 1.52 meter (5 foot) low voltage cable. The power supply is sold separately as an accessory.
      a. The ICAM7000 series voltage shall be between 12 - 24VDC ($^+/_-$ 10%) measured at the iCAM (with iCAM connected).
      b. The ICAM7000 series current draw shall be 2 AMPS @ 12 VDC or 1 AMP @ 24VDC, measured at the iCAM.
      c. It is recommended that each iCAM is supplied power from the power source (Do not "daisy chain" the power from iCAM to iCAM.)

2. **Network Connections**
   A. Ethernet network wiring to connect with the network switch for communication.
      a. Cable Type: CAT5e Cable – 8 conductors with RJ-45 connectors (IPV4 support only)

      b.   Maximum Length: 100 meters (328 feet) between network devices.
      c.   The iCAM7000 series shall be able to accommodate static IP addresses.

3. **Wiegand Input & Output**
    A.   A 4 pin connector pigtail shall provide connection to the iCAM7000 series for the purpose of connecting Wiegand communication cables. The iCAM7000 series shall provide Wiegand input functionality and Wiegand output functionality.
    B.   The reader shall support Wiegand output functionality for connection to an Access Control System.
    C.   For Wiegand output, the iCAM7000 series shall require a 3 wire interface (Data0, Data1, and Ground). The maximum wire length from iCAM to Access Control Panel is 500 feet (152m)
    D.   By default the iCAM7000 series shall ship with Wiegand output and input active. To disable Wiegand in/out it will require configuration via the web interface.
    E.   The iCAM7000 series shall support wiegand outputs up to 200 bits and shall provide means, via the iCAM web configuration, for an Administrator to define multiple unique output fields and parity assignments.
       a.   Fixed Wiegand Out Card ID
    F.   The iCAM7000 series web configuration shall allow setting the iCAM7000 series Wiegand Input format, Wiegand output for events, and upload custom Wiegand formats.
       a.   The predefined Wiegand Formats are:
          i.   Standard 26-bit.
         ii.   Wiegand bypass – selectable through web config screen

    G.   The iCAM7000 series web interface shall provide the iCAM7000 series expanded Wiegand compatibility. It shall allow Administrators to define a Pass-Thru format with the following information:
       a.   Total bits - the number of Wiegand bits in the Wiegand string (26~200).

4. **General Purpose Input / Relay Output**
The iCAM7000 series shall provide General Purpose Input and relay outputs as follows:
    1.   Two (2) Relay outputs configurable through the web configuration interface.
       a.   Relay 1 (output) – Set to either Enabled to Disabled and provide a timer value from 1 ~ 75 seconds.
       b.   Relay 2 (output) – Set to either disabled, reject or tamper, and provides a timer value from 1 ~ 75 seconds.
    2.   Four (4) General Purpose Inputs configurable through the web configuration interface.

5. **Single-Door Control**
    1.   The iCAM7000 series shall have a built-in relay with a max amperage of 3A @ 24 volts.
    2.   The iCAM7000 series shall support Integrated Door Access Control (Relay, REX, Contact Monitor).
       a.   The iCAM7000 series shall need:
          i.   A dead bolt or door strike.
         ii.   A snubber diode to protect regulated DC power supply from inductive kickback (1 N4007 diode or equivalent recommended).
        iii.   A separate power supply for the dead bolt or door strike based on supplier's recommendations.
       b.   The Single-Door Control option shall not require Wiegand Output signals.

6. **Tamper Switch**
The iCAM7000 series shall have two tamper switches found in the front and back of the unit.

1. The iCAM7000 series tamper switch shall be a push-button that will signal that the iCAM7000 series has been tampered with when the switch shall not be in its normal depressed state.
2. The iCAM7000 series tamper switch shall trigger the reader to stop operations and emit an audible alarm directly from the camera unit. Must be enabled under Relay 2 in the web configuration.

7. **LED's**
   1. The bottom of the iCAM7000 series shall have one tricolor LED that shall be visual indicators. The default LED successful confirmation event color shall be green; the default LED unsuccessful confirmation event color shall be red; the default LED place iris or place card events color shall be blue.
   2. The iCAM7000 series shall have, at the front, a power LED that shall blink red when the power is on, but not connected to the network.
   3. The iCAM7000 series shall have, at the front, a power LED that shall be solid blue when the power is on and connected to the network.

8. **Display** (iCAM7100 Series only)
   At the front, the iCAM7100 series shall have a 4.3" Color LCD to display the time and date, 20 character message, successful or denied visual display, 6 programmable function buttons, and pop-up pin pad.

   1. The iCAM7100 web configuration shall allow administrators to adjust the LCD's brightness, turn the LCD display on or off, and enable the function key screen after successful recognition.

9. **Keypad**
   a. At the front, the iCAM7100 series shall have a popup pin-pad when the F3 function button is selected displaying three rows of three numeric keys and four action key virtual buttons.
   b. The keys of the ICAM7100 series illuminated keypad shall allow enrolled users to be verified with use of their pin+iris.
   c. Available PIN Modes
      i. 26 Bit Burst
      ii. 8 Bit Burst
      iii. 4 Bit Burst
      iv. Galaxy Format
10. **Smart Card**
    a. Embedded in the iCAM7000 Series as an option shall be either an Omnikey Smart Card reader/writer or Multi-Class reader:
    b. Smart Card Type
       i. HID iClASS
       ii. MiFARE

2.4 Specific Features

The iCAM7000 series shall have options where the standard product will be enhanced or altered via the use of additional components to provide features in addition to the common features listed above. The optional components shall be as listed below and will provide specific operations as listed under the appropriate product flavor section.

1. Each iCAM7000 series shall have the option to have iris only without an LCD display; when no card reader or display it will be commonly referred as iCAM7000
2. Each iCAM7000 series shall have the option to have an embedded Omnikey smart card reader/writer and no LCD display; when embedded it will be commonly referred as iCAM7010-U1
3. Each iCAM7000 series shall have the option to have iris only with an LCD display; when no card reader embedded with an LCD display it will be commonly referred as iCAM7101
4. Each iCAM7000 series shall have the option to have an embedded Omnikey smart card reader/writer with an LCD display; when embedded and LCD display it will be commonly referred as iCAM7111-U1
5. Each iCAM7000 series shall have the option for an analog CCTV camera. This can be installed on any of the iCAM's mentioned below. (Analog CCTV camera not sold by Iris ID Systems)

A. iCAM7000 (BASE)

The iCAM7000, dual iris recognition camera, TCP/IP enabled, embedded 5MP face camera with flash, shall support only 1:N mode.

1. The 1:N mode shall support single factor authentication via the presentation of a user's live iris evaluated against the on-board database or ICU4000 database of biometric records. (See Figure 3 and 1)
2. Biometric Record Options:
    a. Default Template Configuration - 1:N.
        i. Max Default template storage in operation mode: option 3 - 5,000 Biometric templates per iCAM7000. (See Figure 3)
        ii. Max Default template storage in operational mode: option 1; with ICU4000 – 100,000 biometric templates. (See Figure 1)

B. iCAM7010-U1 (Omnikey reader)

The ICAM7010-U1, with an embedded Omnikey smart card reader, shall provide a single (iris only) or two-factor (iris and card) authentication.

1. The 1:N mode shall support single factor authentication via the presentation of a user's live iris evaluated against the on-board database or ICU database of biometric records. (See Figure 5)
2. The 1:1 verification shall support two factor authentication via the use of a code or credential activation of the biometric record, then real-time evaluation of the presented iris against the stored biometric record. (See Figure 7)
3. Biometric record options:
    a. Default Template Configuration – 1:1
        i. Iris templates are stored on each enrolled user's card. No data is stored locally on the iCAM7010-U1 or ICU4000. (See Figure 2)
        ii. Iris templates are stored on-board the iCAM7010-U1 or ICU4000 and the card is used as a pointer to the user's biometric template. (See Figure 3 and 1)

C. iCAM7101

The iCAM7101 is a dual iris recognition camera, TCP/IP enabled, embedded 5M face camera with flash, and 4.3" color LCD display.

1. The 1:N mode shall support single factor authentication via the presentation of a user's live iris evaluated against the on-board database or ICU database of biometric records. (See Figure 5)
2. The 1:1 mode shall support PIN + iris verification via the on screen pop up pin-pad and presentation of a live iris evaluated against the on-board database or ICU database of biometric records. (See Figure 6)
3. Biometric Record Options:
   a. Default Template Configuration - 1:N.
      i. Max Default template storage in operation mode: option 3 - 5,000 Biometric templates. (See Figure 3 in Appendix)
      ii. Max Default template storage in operational mode: option 1; with ICU4000 – 100,000 biometric templates. (See Figure 1)

D. iCAM7111-U1 (Omnikey reader)

The ICAM7111-U1, with an integrated Omnikey smart card reader and LCD display, shall provide a single (iris only) or two-factor (iris and card) authentication.

1. The 1:N mode shall support single factor authentication via the presentation of a user's live iris evaluated against the on-board database or ICU database of biometric records. (See Figure 5)
2. The 1:1 verification shall support two factor authentication via the use of a code or credential activation of the biometric record, then real-time evaluation of the presented iris against the stored biometric record. (See Figure 7)
3. Biometric record options:
   a. Default Template Configuration – 1:1
      i. Iris templates are stored on each enrolled user's card. No data is stored locally on the iCAM7111-U1 or ICU4000. (See Figure 2)
      ii. Iris templates are stored on-board the iCAM7111-U1 (Figure 3) or ICU4000 (Figure 1) and the card is used as a pointer to the user's biometric template.

E. iCAM7100 Series Time & Attendance mode

The iCAM7100 series (with LCD display) will allow time and attendance functions when used with the six (6) programmable function keys on the right and left side of the display. These functions keys will provide up to six (6) punch key outputs that can be exported by running a report though the software.

F. 3 Factor Authentication

To perform 3 factor authentication, the iCAM series hardware and Iris ID EAC enrollment/-configuration software **must** be used in conjunction with a (PACS) third party access control/-authentication panel. The PACS panel must support "Card + PIN" mode and accept a Wiegand input. (Please see system architecture diagram in Appendix: Figure 4)

G. Templates

The iCAM7000 Series shall use:
1. The Biometric User Record shall be an encrypted digital template of the user's iris pattern, used on the ICAM7000 series for the following authentication purposes in the EAC DB:
   a. 1:1 Verification.

   b.   1:N Identification

3. Servers, Workstations & Software

3.1 Minimum Computer Requirements

1.   PC Workstation with:

   a.   Windows 2000, XP Pro, Server 2003, Vista or Window 7 Operating System
   b.   Internet Browser (such as Internet Explorer)
   c.   Pentium 4 compatible 1.6GHz Processor
   d.   512MB Memory (RAM)
   e.   Ethernet Port (100 Mbps recommended)
   f.   Mouse, SVGA Monitor, Keyboard

3.2 Software

The IrisAccess iData Entry Access Control (EAC) software application is sold separately and is used to enroll, manage, monitor, and control the iCAM7000 series. Below is a list of the different software applications included on the EAC software application.

1.   IrisServer – Provides communication with multiple enrollment stations and monitors the status of ICU's connected to the Iris Server
2.   IrisEnroll – Performs iris enrollment of individuals and has capability to set their access rights and privileges. Provides issuance of iris data to smart cards and enrolls the card ID from PROX card or smart card into the IrisAccess system.
3.   IrisICUAdmin – Manages the setting of ICU's and optional DCU's which are connected to the Iris Server.
4.   IrisDBAdmin – Allows the ability to create upgrade or drop database, import and export database functions,, backup database, and restore database.
5.   IrisManager – Provides the ability to add, modify, or delete users, generate enrollment, access and system event reports, manage door groups and time groups, and manage visitors and privilege expiration.
6.   IrisMonitor – Provides the ability to monitor the IrisAccess system, select action buttons for warnings.
7.   Option 3 Administrator – Web based system administrator login. System configuration for; operational modes, networking, Wiegand settings, card settings, LCD and function key settings, and GPI and Relay settings.

The iData Software Development Kit (SDK) is the basic development tool integrators use to create custom built identity-dependent applications utilizing IrisAccess 7000 series product. The SDK is available in all supported programming languages, VB, C++, and C#.
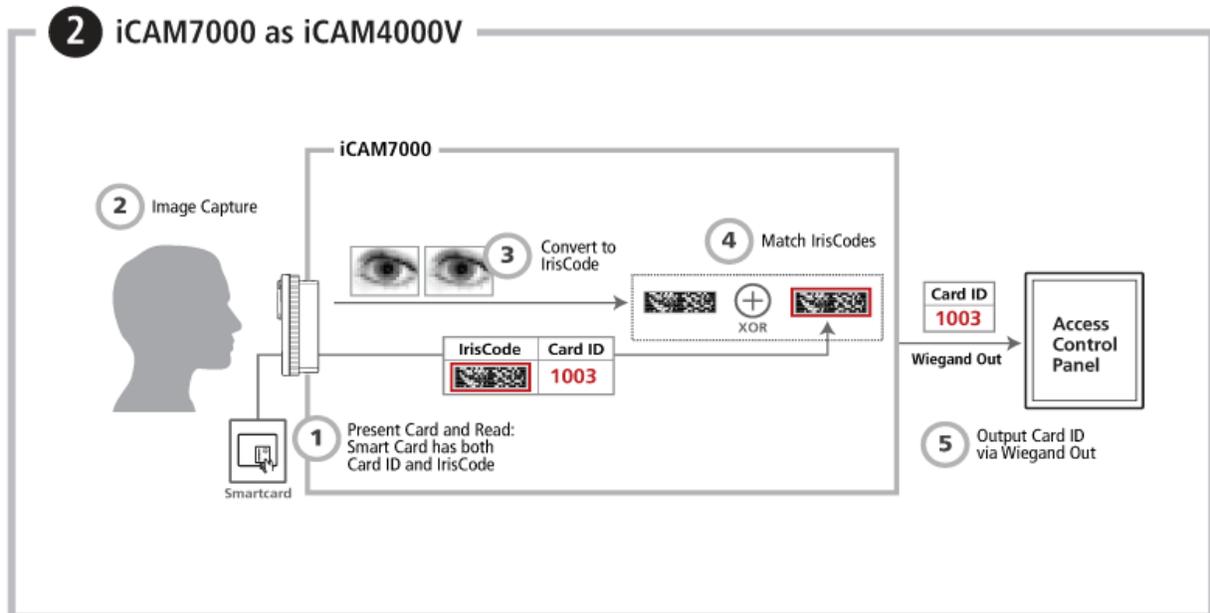
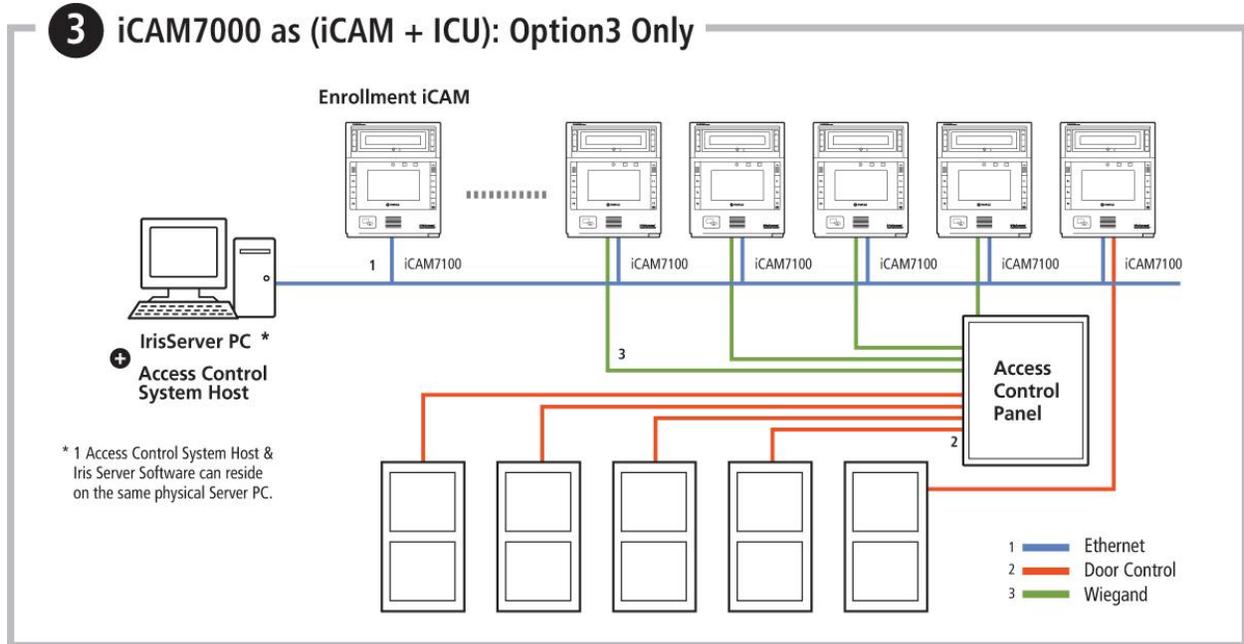# 4. Appendix

4.1 Operational Modes :

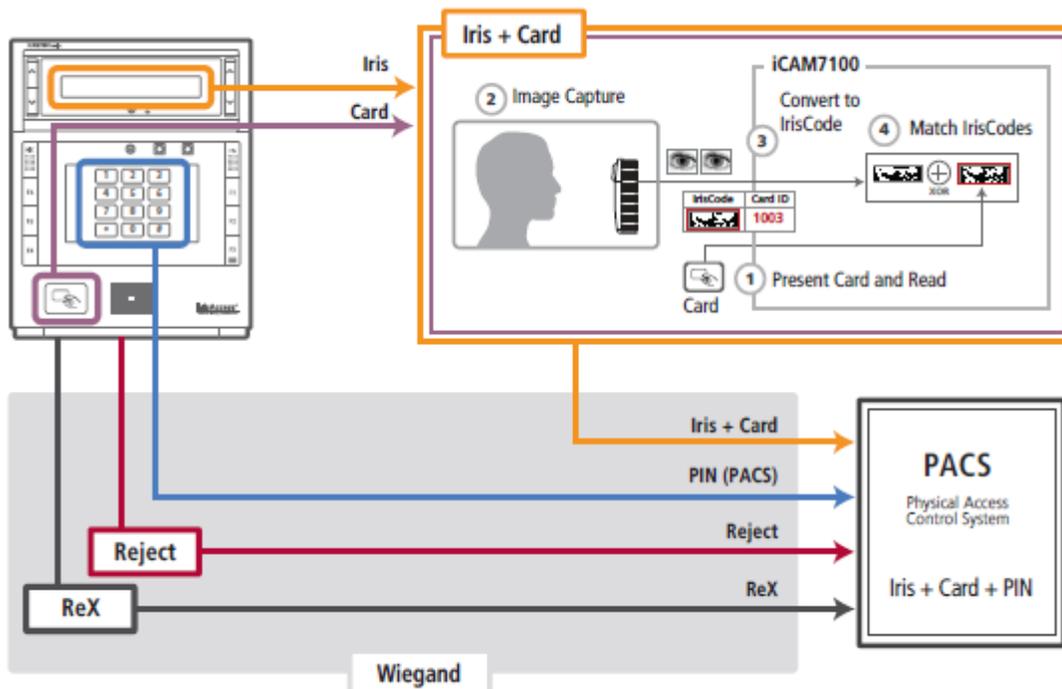### 1. Option 1 Configuration Diagram (Figure 1)
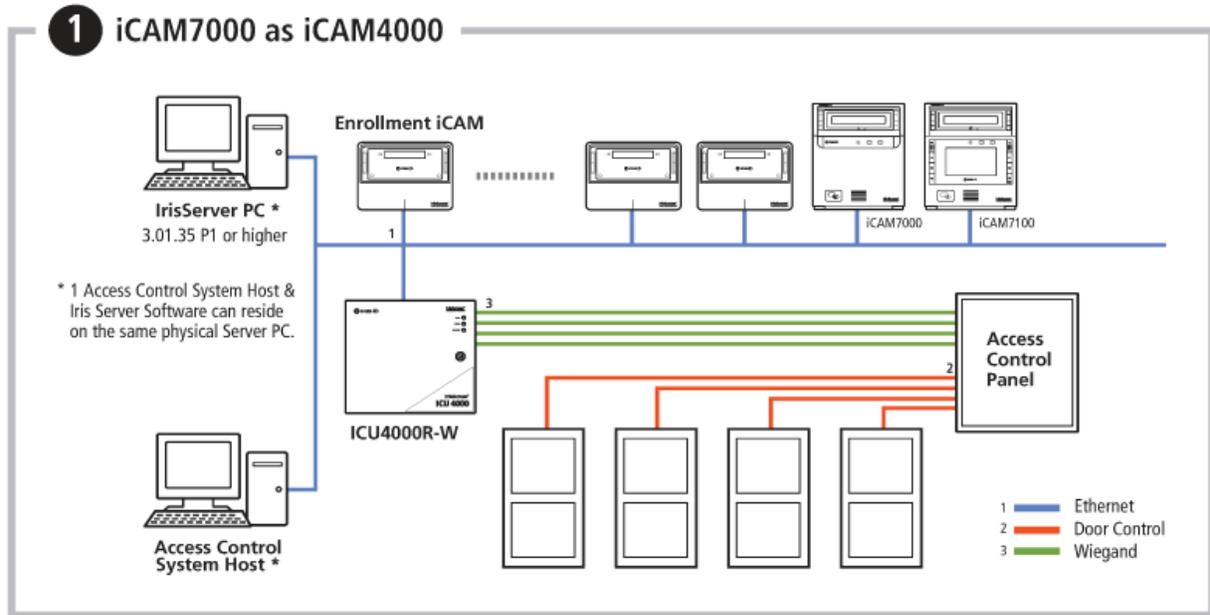
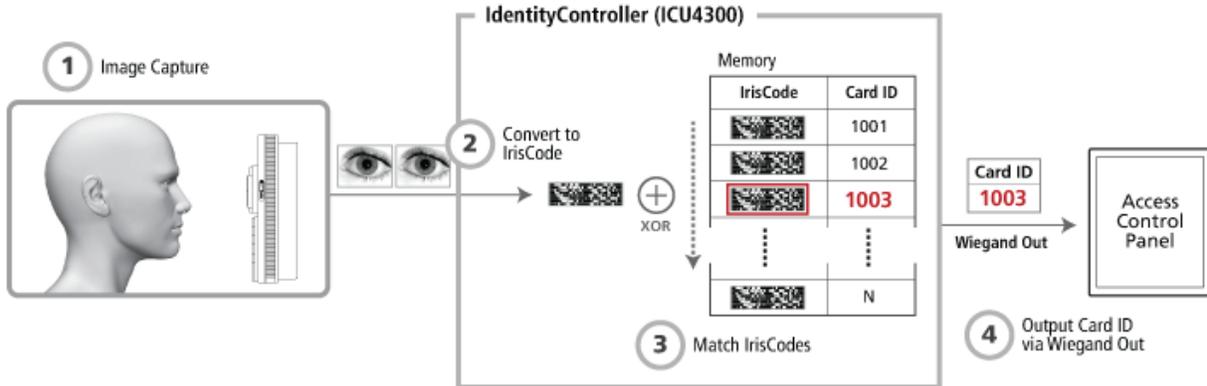### 2. Option 2 Configuration Diagram (Figure 2)

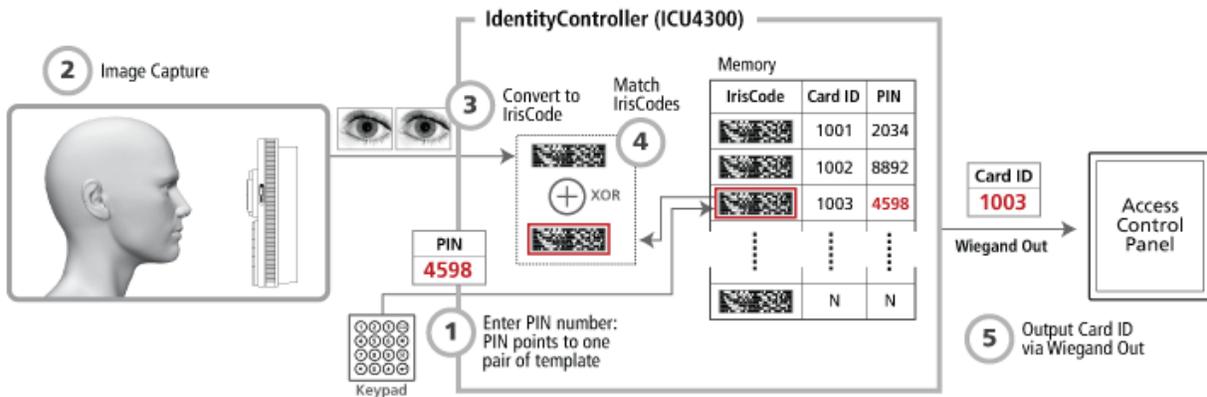3. **Option 3 Configuration Diagram (Figure 3)**

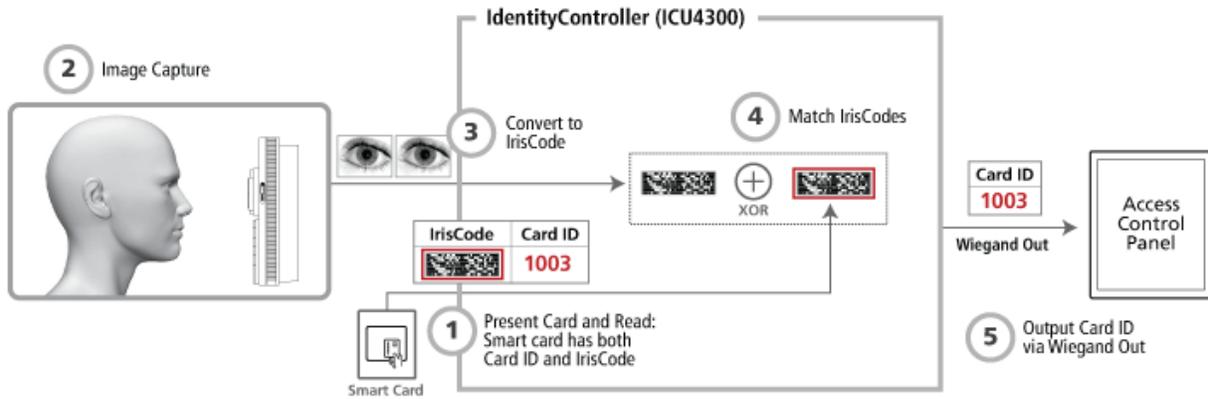4. **3 Factor Authentication with use of a third party PACS system set to card + pin (Figure 4)**

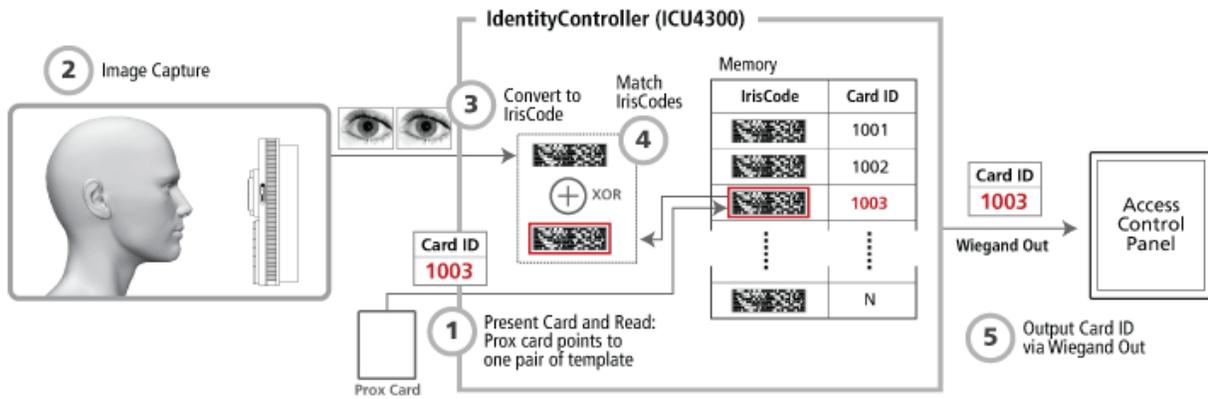5. **Iris in the 1:N search identification mode (Figure 5)**

6. **Iris in the 1:1 verification mode with a PIN (Figure 6)**

7. **Iris in the 1:1 verification mode with a smart card (Figure 7)**

8. **Iris in the 1:1 verification mode with a prox card (Figure 8)**

5. iCAM7000 Series Documentation

5.1 iCAM7000 Series Hardware Guide

http://irisid.com/download/documentation/08%20icam7000_series/iCAM7000_Hardware_Guide_ver1_1.pdf

5.2 iCAM7100 Series Hardware Guide

http://irisid.com/download/documentation/08%20icam7000_series/iCAM7100_Hardware_Guide_ver1_3.pdf

5.3 iCAM7000 Series User Guide

http://irisid.com/download/documentation/08%20icam7000_series/iCAM7000%20Series%20User%20Guide.pdf

5.4 iCAM7000 Series CAD Drawings

http://irisid.com/1571