Biometric Systems for Secure and Rapid Access

Biometric technologies use unique physical or behavioral characteristics for high confidence human authentication. They are more reliable than other easily compromised identity options that rely on something one knows or carries. There are more readily measurable characteristics in the iris, the visible colored ring around the pupil, than in other biometrics.

Like snowflakes, every human iris is entirely unique and is not influenced by genetic inheritance (DNA). The possibility of finding two identical irises lies in the order of $1:10^{78}$. A further advantage is the fact that the structure of the iris is determined during pregnancy and remains unchanged the whole life.
This uniqueness is the core of iris recognition - the most accurate, stable, scalable and rapid human authentication technology in existence.

Unlike retinal scanning, which is too up-close and personal for many, iris recognition is non-contact and quick, offering unmatched accuracy when compared to any other security alternative .... from distances as far as 25 to 37 cm.
Identification is carried out by a non-intrusive quick look into the lens of an video camera in the optical unit. The important parameter is the structure, not the color of the iris.
The identification process also works with carried contact lenses (without structure) and glasses. Eye diseases, barring trauma, such as cataracts, glaucoma, etc. will not influence the usage of the system.

A proximity sensor activates the camera on approach. System operation is guided by speech messages. This makes usage very easy. The system IrisAccess™ can be implemented in many applications in the security and high-security area.

The system is network capable, supports standard SQL database systems and can be customized or integrated into existing structures through software engineering.

Access with lost or stolen access cards, transponders or pin-codes or the usage of the access rights from a colleague is no longer possible.

iTRAVEL
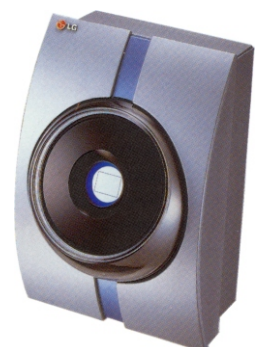
IrisAccess 4000

LG, producer of IrisAccess™, the world's leading deployed iris recognition platform, redefines state of the art in authentication with LG IrisAccess™ 4000 - a third generation iris recognition system with a range of models that deliver advanced identity authentication capabilities you'll want to look into.

The new LG IrisAccess™ 4000 iris recognition system represents the third generation of the world's number one deployed iris recognition platform. Iris Access 4000 is actually a range of variably configurable products that offer increased integration flexibility and application versatility. Every model in the range comes with a camera that captures two eyes in very rapid succession. Enrollment and recognition is easier than ever with a highly intuitive visual user interface that enables users to quickly position themselves properly for enrollment or recognition. The repertoire of audio prompts has also been expanded to provide a more intuitive user interface for improved enrollment and recognition performance. A motor-driven auto-tilt mechanism makes camera alignment for proper height a simple "one touch of a finger" proposition. LG designed the new Iris Access 4000 with future needs in mind. So every variant in the IrisAccess 4000 range comes equipped with a facial recognition ready camera, purpose built-illumination, and facial recognition camera drivers in the new iData software suite. All that is required is the addition of facial recognition software to deliver biometric multimodality.

The new LG software for LG IrisAccess™ sets new standards for security. A variety of FIPS140-2 compliant cryptographic algorithms including DES, 3DES, AES are supported within a new PKI-based security architecture. Software drivers get the most out of the new two-eye image acquisition process, and allow you to designate whether authentication decisions will be made with right eyes, left eyes, either eye, or both eyes.
LG's robust industry standard-setting countermeasures package has been enhanced.
Software allows the IrisAccess™ 4000 system to be configured for anti-passback, or even to capture facial and iris images of non-authorized persons attempting to enter protected areas.

IrisAccess™ 4000. Two eye image acquisition enabling a variety of authentication configurations. Biometric multi-modality planned for and built-in, as well as choices when it comes to multi-factor authentication.

And what other system has a smartcard interface that's designed not only to identify who a person is but also to automatically set a camera to that individual's height, and provide audio feedback in a language that the person wants to hear?

Introduction

Multifactor authentication is something LG knows customers want, and the new IrisAccess system covers this need off beautifully. Both iCAM 4000 and iCAM 4100 can be configured to read HID iCLASS, DESFire, and MiFARE and CAC compliant cards with in-device embedded smartcard readers from the world's leading card reader producers. When a reader is embedded, a card icon placed on the casing makes it clear where the card should be placed for fast verification. Card reader-equipped models of iCAM 4000 and iCAM 4100 are designated with a 10 suffix, so become 4010 and 4110 respectively. Multifactor authentication can also be delivered by the 16-element keypad that comes standard on the iCAM 4100 unit. The authentication options afforded by being able to designate iris authentication by left, right, either or both eyes, plus a facial recognition overlay, a smartcard token, plus in the case of the iCAM 4100, a PINpad, are quite extraordinary.

The system exists for security, and LG has built it in. Unlike other systems, there are no biometric templates stored on any accessible external components. Experts concede that countermeasures built into the LG IrisAccess™ set the standard for the industry and note in this area, many other biometric systems leave much to be desired. LG improved the countermeasures package in the LG IrisAccess™ 4000. Security is also a key driver when it comes to software, where a new LG software line for access control supports several different (including FIPS compliant) encryption alternatives, as well as PKI.

Power Indicator

VFD Window
(graphical display enhances interactive interface, communicates authentication status)

Iris Camera
(exclusive autofocus iris image aquisition process delivers rapid two eye enrollment/recognition

Facial Recognition Illuminator

Facial Recognition-Ready Camera
(captures facial image for facial recognition)

Up/Down Button
(motorized auto-drive for easy height adjustment

Alphanumeric Keypad
(supports PIN input and workforce management interface)

Device-Embedded Smart Card Reader
(delivers LG token Authentication with leading smart cards)

Ethernet

USB

Serial (RS 232/422)

Wiegand

iCAM 4000   **iCAM 4100**

IrisAccess 4000

The new IrisAccess™ 4000 range has features no other iris system offers.
An auto-focus lens enabled iris acquisition process that ensures rapid, high quality iris images for enrollment and recognition. An automatic motor-driven targeting aid is just part of an intuitive and interactive voice and visual user interface. All models feature the robust LG countermeasures package experts concede sets the standard for the industry.

Two Eye Authentication
IrisAccess™ 4000 quickly acquires digital images of both irises. A variety of authentication configurations can be selected including right, left, either, or both eyes.

Facial Recognition Ready
Mindful of growing interest in multi-biometric use, all IrisAccess™ 4000 models incorporate a facial recognition-ready camera and purpose-built illuminators.

Two Factor Authentication
Card-based authentication is made easy by ordering an IrisAccess™ model containing a device-embedded reader from an increasing number of leading card companies affording compliance with the assured record non-duplication and out of the box issuing functionality afforded by LG´s token authentication architecture.
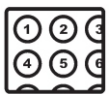
Multi-Factor Authentication
is also afforded by a 16-element keypad that´s standard on the top of the line model 4100 and allows entry of up to 10 digit PINs in the system - either as a second or third authentication layer to iris. And, it´s an ideal input device for use in workforce management.

Status information
Input requires feedback, and that´s exactly what you get from the vacuum fluorescent display that comes standard with top of the line model 4100. Useful for providing feedback to enrollers, it also delivers information to users upon authentication, and a feedback mechanism for the workforce management environment.

Network connectivity
With each unit IP-addressable, IrisAccess™ 4000 is ideal for the very largest enterprise-scale network deployment and comes with a variety of standard connectivity options including USB, Ethernet, Serial RS-232/422, and a highly configurable Wiegand interface repertoire.

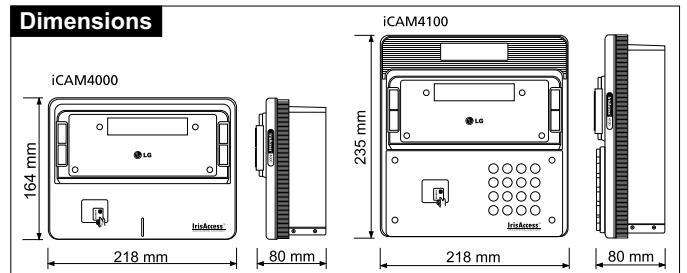# IrisAccess™ 4000
Advanced Identity Authentication

Technical Data

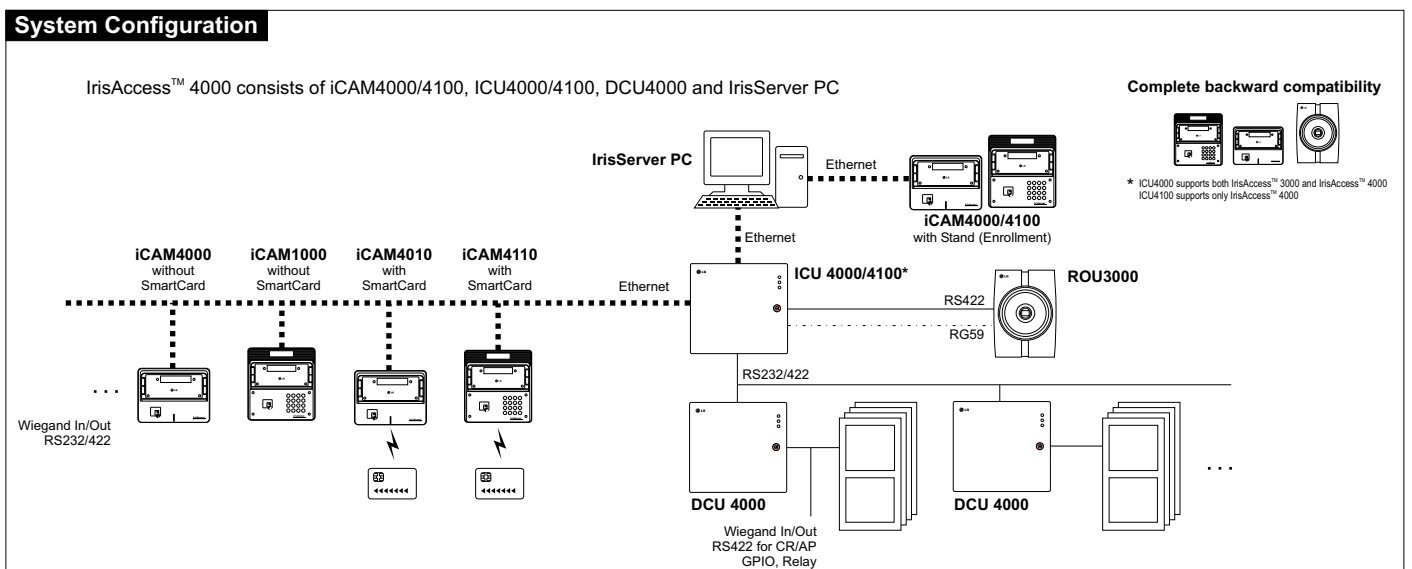|	iCAM 4000	iCAM 4100
Dimensions (W x H x D)	218 x 164 x 80 mm	218 x 235 x 80 mm
Weight	2 kg	2,2 kg
Rotation Angle	+30° / -20"	+35° / -20°
Power Input	12V DC, 5A	
Power Consumption	40 W	
LED Indication	Power (Blue), Operating Range (green), Out of Range (orange), Accept (green blink), Reject (orange blink)	
Voice Indication	Flexible Voice Message (standard: english; other languages: downloading available)	
Operating Range	9,8" to 14,6" (25cm to 37cm)	
Operating Temperature	32°F to 104°F (0°C to 40 °C)	
Storage Temperature	-4°F to 140°F (-20°C to 60 °C)	
Humidity	0% to 90% Non-condensing	
Mounting High	124 to 165 cm	
Interface	Ethernet, USB, Smart Card Reader, Proximity Card Reader (Wiegand & RS422)	
Equipment supplied	AC Power Cable, AC Power Adapter, Straight Ethernet Cable	

Identity Controller ICU4000 / ICU 4100	
ICU 4000	supports IrisAccess™ 3000 and 4000 cameras
ICU 4100	supports IrisAccess™ 4000 cameras only
Dimensions (W x H x D)	430 x 420 x 163 mm
Weight	5,5 kg
Power Input	24V DC, 6A
Power Consumption	100W
CPU	x86 Compatible
Memory	DDR 256 MB
Storage	Compact Flash 256 MB
Operating System	Linux
LED Indication	Power (green), Status, Network
Operating Temperature	32°F to 104°F (0°C to 40°C)
Storage Temperature	-4°F to 140°F (-20°C to 60°C)
Humidity	0% to 90% Non-condensing
Interface	Ethernet, USB, Smart Card Reader (Wiegand & RS422) RS 232/422/485 Selectable for DCU4000 interface
Equipment supplied	AC Power Cable, AC Power Adapter, Straight Ethernet Cable, Grand & Key

Door Controller DCU4000	
Dimensions (W x H x D)	430 x 420 x 163 mm
Weight	4 kg
Power Input	12V DC, 5A
Power Consumption	30W
LED Indication	Power (green), Status 1, Status 2
Operating Temperature	32°F to 104°F (0°C to 40°C)
Storage Temperature	-4°F to 140°F (-20°C to 60°C)
Humidity	0% to 90% Non-condensing
Interface	Proximity Card Reader (Wiegand & RS422) GPIO (Door Control, Alarm, Egress, etc.)
Equipment supplied	AC Power Cable, AC Power Adapter, Cable Grand & Key

IrisServer / IrisClient PC Requirements	
Operating System	Windows 2000, Windows XP
Processor	Pentium IV 800MHz or higher
Memory	256 MB or higher
Hard Disk	10GB or higher
Ethernet	10/100 Mbps, Full Duplex
Other	1 Serial Port, 1 Parallel Port, CD-Rom, 1 free PCI-Port 1 free PCI-Port (IrisAccess™ 3000 only)

Dimensions

System Configuration

IrisAccess™ 4000 consists of iCAM4000/4100, ICU4000/4100, DCU4000 and IrisServer PC

Complete backward compatibility

* ICU4000 supports both IrisAccess™ 3000 and IrisAccess™ 4000
ICU4100 supports only IrisAccess™ 4000

IrisAccess

Harmless
Acquiring your iris image through the optical units is completely safe. Capturing the iris image is just like taking a picture. The level of radiance from 2 IR LED in the optical units meets the US and the European eye safety standard.

Convenient Operation
You just enroll your iris for registration and recognition. The identification process can be performed perfectly, regarding of wearing eyeglasses, most sunglasses or soft contact lenses.

Non-Contact
The iris image can be fully captured with the distance of 25 cm to 37 cm from the optical units, which is non intrusive.

Accuracy
Iris recognition is based on the most mathematically unique biometric - the iris of the eye. The human iris is absolutely unique, even between twins or an individual's right and left eyes. A number of objective tests and evaluations over the last eight years have identified iris recognition technology as the most accurate biometric. The most recent of these evaluations was reported by the United Kingdom's National Physical Laboratory in April 2001.

Expense Curtailment
There are no additional expenses for new registration, once the system is installed. Single ICU4000 can control up to 4 iCAM4xxx installed adjacent to 4 doors.

Strengthening Current Security
If you have already installed one of access control systems, an additional installation of LG IrisAccess™ will prevent existing flaws of the current security system and offer you much higher security.

Scalability
LG IrisAccess™ can handle sizeable database and there is no negative impact on the accuracy as database size increases.

Easy Registration
Just install the software on a Computer. Within minutes you will be able to perform registrations with just a few clicks.

Speedy Identification
An identification can be made within 1 to 2 seconds.

- **244 Characteristics**
- **Proximity Sensor for automatic identification**
- **Autofocus camera**
- **Audio Guidance**
- **Illumination meets eye safety standard**
- **Verification with tokens possible**
- **Support of SQL Database Systems**
- **Identification within 1 to 2 seconds**
- **512 Byte IrisCode™**
- **Usage with Glasses or Contactlenses possible**
- **Possible integration in Access Control Systems**
- **Identification mode is standard (one-of-many)**

Presented from: