CMITECH
IMAGING EXPERTS

EF-45

Iris Recognition System

Innovative face positioning feedback provides outstanding subject ease-of-use at capture range of 35 to 45 cm

Product Description

The EF-45 next generation dual iris imaging system provides unprecedented subject ease of use through a highly innovative and intuitive user positioning approach. Subjects will view their own face in a front-facing, high resolution 5.0 inch color display to position themselves correctly within the real-time graphic interface.They will intuitively and naturally move to the correct position by simply centering and sizing their face image to the box within the display. In addition, the positioning box and the top border turn green to indicate proper distance positioning, after which the iris biometrics images are automatically collected, provided that the real time image quality metrics are satisfied.

In addition, this system features an expansive capture range of 35 to 45 cm in enrollment mode. Now, capturing highest quality iris biometrics images is fast, simple and fully intuitive for all subjects, including non-acclimated ones. For small scale access control or time & attendance applications, the capture range can optionally be extended to 30 to 45 cm in recognition mode, further increasing positioning flexibility and ease of use.

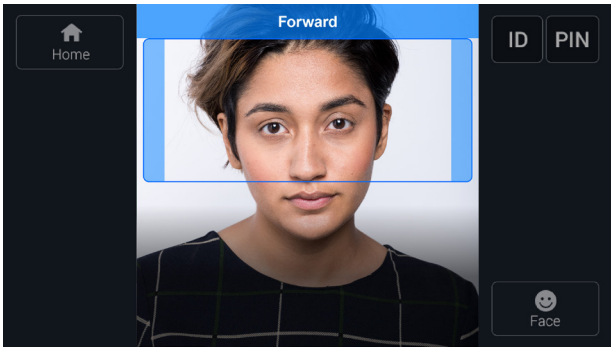
The system also captures a high quality face image simultaneously with iris image capture. On board face recognition is optional.

The EF-45 is an embedded system that includes its own ARM mainboard to manage all face and iris imaging processes. The normal external communication to host systems and clients is through TCP/IP via an Ethernet connection. The embedded architecture also allows for on-board iris and face template generation and matching against a local data base.

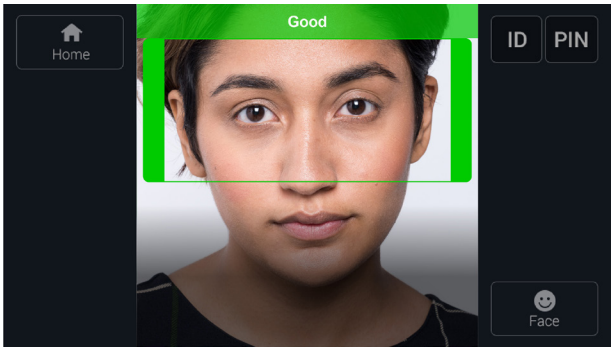
The EF-45 is offered in two hardware configurations: one for Physical Access Control (PACS) and Time & Attendance applications that include a wall mount bracket and a full set of I/O connectors; the second configuration is for general identity management applications. WiFi and card reader options are also available.

Innovative, Intuitive Subject Positioning

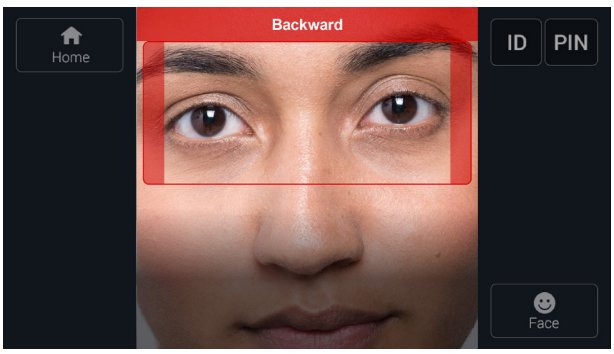
The EF-45's face imaging sensor detects and displays the subject's face at up to 1.0 meter from the system on the high resolution color display. The subject is instructed to simply make his or her face fit the positioning "guide box" to intuitively direct the subject to move forward or back into the capture range, that is, the proper distance. In addition, the guide box and top border turn green when the subject is within range, which tells the subject to stop and wait until the image capture process is completed. Like a smart phone "selfie" image, this interface is very fast and highly intuitive, with typical capture times of less than 1.0 second from proper positioning.



Move Forward
Out of range
Too far away at more than 45 cm



Good
Within proper imaging range
Between 35 cm to 45 cm



Move Backward
Out of range
Too close at less than 35 cm

Note: above graphics are artist's renditions, not actual screen shots.

Key Features

Feature	User Advantages
State-of-the-art optical design	The optical design includes utilizing highest quality optics and very fast shutter speeds, which allows the systems to exceed industry standards for image quality.
Advanced, proprietary stereoscopic eye localization	The EF-45 accurately locates the position of both eyes in 3D in real time to optimize subject ease of positioning and iris image quality. This feature enables the fast and reliable subject distance positioning indicators as blue, green or red color codes.
Highest image quality	Meets or exceed the ISO 19794-6 2011 iris imaging specification.
Simplest of user instructions	Very simple and repeatable subject instructions: • Position face within guide box in display (like smart phone "selfie") • Move toward the system to size head to box. • Once within range, the box and indicator bar will turn green to indicate proper positioning. Capture is automatic once subject is in proper position and real time image quality metrics parameters are met
Stand-off distance of 35 to 45 cm in enrollment mode	Standard extended range ensures robust, fast and easy positioning. Comfortable range for subjects in wide variety of desktop, countertop, kiosk or wall mount placements.
Optional Extended Depth of Capture for iris authentication in Recognition Mode	Depth of capture can be extended to range of 30 to 45 cm in Recognition Mode (not necessarily ISO compatible). Intended for small to medium scale access control deployments. Selectable in SDK.
Real time image quality metrics	Image quality metrics included in capture algorithm: • Subject gaze angle (i.e. whether the subject is looking directly ahead at the imager) • Subject motion • Focus • Usable iris area (occlusion)

Feature	User Advantages
Face image capture	Face images are collected in synchronization with the biometric iris images, so that the data record consists of one face image and two iris image. Note: the face images do not qualify as ISO standard, and therefore are not intended for face recognition or an ID card photo. They are intended for manual verification of the subject's identity and association in the data record along with the iris images.
Very wide interpupillary distance	The wide interpupillary distance range accommodates all adults and young children, making it ideal for large scale, public authentication programs.
Compact, lightweight design	Very small size of design optimizes placement or mounting options.
Kiosk mountable version for integration into kiosks or other enclosures	Directed at OEM's and system integrators, the system is offered in a mountable version that has modified face plate to mechanically integrate into kiosks and similar configurations. (Contact CMITech for design details and drawings.)
Cable connectors	Plug in connector kit for all cabling (except RJ-45 Ethernet) included in accessories package
WiFi option	Please contact CMITech for Wi-Fi dongle support for each country
Card reader option	For support of dual or multi-factor authentication, or backup for special case users

Please contact CMITech for more information on the EF-45 product and supported Software Development Kits (SDK)

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Software Architecture Technical Specifications

Embedded CPU and OS	ARM Cortex A9 quad-core processor with embedded Linux OS
Iris on-board algorithm for encoding and matching	Standard in all configurations
On-board iris data base	Up to 10,000 subjects (iris template pairs) for both 1:1 and 1:N matching
Flexible Software Development Kit configurations	C# and C++ High Level SDK provides host side reference application for simple integration Platform independent RESTful type SDK also available. Requires API development of host side application to connect to EF-45 resident services layer

Other Technical Specifications

Dimensions	166 x 166 x 43 mm (6.5 x 6.5 x 1.7 inches) without mounting wall plate
Weight	630 g without wall plate
On-board data storage	Up to 5,000 iris template pairs (useful for 1:N authentication mode) with match speed of under 1.0 seconds
Dual factor authentication with iris recognition	Smart card and PIN options for more secure authentication
Iris image output	Meets new ISO 19794-6 2011 standard:
Iris image pixel resolution	640 x 480 pixels, 8 bit depth. Supports multiple formats.
Adjustable FAR (false accept rate)	Iris algorithm threshold can be modified to adjust FAR to between 10^{-8} and 10^{-14}
Operational iris imaging distance (stand-off range) and depth of field	35 to 45 cm range (10 cm depth of capture range) in enrollment mode. Meets ISO 19794-6 specification. (Enrollment mode is equivalent to ID Management capture mode.)
Iris positioning indicators	Face positioning within box in LCD display for X – Y Face sizing to bracket (or box) within LCD display for distance (Z) positioning with simultaneous color bar display for correct distance positioning: Blue: too far away Green: OK Red: too close Supplemental voice distance feedback standard. Convertible to local language via .wav file substitution.
Auto tilt	Yes, internal: +25 deg to -20 deg tilt that covers height range of 40 cm 45 to 85 mm
Iris time of capture	Typically about 0.5 to 1.0 second from time subject's eyes are placed within proper capture volume
IR illumination for iris imaging	Dual wavelength LEDs to conform to ISO best practices for iris imaging
Face image capture	Standard 24 bit color (for reference image)
Face recognition imaging	Optional on-board encoding and matching.

Audio	24 bit, 1.8 W embedded speaker Line out connector for external speaker
Operating temperature range	0 to 45˚C
Humidity	10 to 90% RH, non-condensing
Illuminator eye safety standard	IEC 62471
Network interface , standard	10/100 Base-T Ethernet (RJ45 connector)
WiFi network interface, optional	Please contact CMITech for WiFi support in each country
Card reader option	Integrated, basic CMITech MiFare / DesFire reader Optional HID multi-class reader for Proximity, iClass, MiFare and DesFire cards
Standard mounting	¼ - 20 UNC (consumer camera tripod mount type)
Kensington lock slot	Yes, standard
Physical access control (AC) configuration: other communications ports	Terminal and wired connectors for: Wiegand in/out, RS-232, RS-485, 2X TTL inputs, USB host (internal), 1 dry contact relay
AC configuration: wall mounting with tamper switch	Detachable wall mount plate for easy installation. Tamper switch standard in AC configuration
Power supply requirement	Input 110 to 240V AC; Output 12V DC, 3.0A Adapter provided standard with system.