

# iCLASS® OEMI50 Module

Contactless Smart Card Module • Read/Write • Wiegand/Serial Interface • 3121

- ▶ **Fully ISO Compliant** - 13.56 MHz reader module, including ISO15693, I4443A and I4443B.
- ▶ **FIPS 201 Compliant** - PIVII compliant reader module (end-point solution).
- ▶ **Flexible Interfaces** - Expansion modules offer either RS232, UART-to-UART, RS485 or USB interfaces.



## ACCESS flexibility.

Designed for embedding into products manufactured by third-parties, the iCLASS® OEMI50 Module is a 13.56 MHz read/write contactless smart card reader/writer in a printed circuit board form factor.

The OEMI50 enables iCLASS technology to be used for multiple applications including cashless vending, biometrics, time and attendance, alarm system control, HVAC control, process control, and point of sale terminals.

A fully functional Wiegand reader with remote antenna, the OEMI50 is easy to use - just connect power, data, and control lines. For read/write functionality, just plug in expansion modules which provide RS232, UART-to-UART, RS485 or USB interfaces.

When used with iCLASS cards, the OEMI50 offers security features such as RF data encryption and mutual authentication using 64-bit keys for each application area, and optional DES or Triple DES data encryption for the HID application area. HID provides key management for access control and other data, stored in the HID application area.

For access control applications, the OEMI50 can read either iCLASS credentials (transmitting the Wiegand formatted data as encoded) or MIFARE® credentials (transmitting Wiegand data based on the card serial number in 26-, 32-, 34-, 37-, 40- or 56-bit formats).

For non-access control applications, the OEMI50 module can read or write to any application area on the iCLASS credential, with all reader functions controlled by an external host processor via the serial port using the iCLASS serial protocol.

The OEMI50 has an audio output, operated by internal firmware, by the beeper control line, or by serial commands via the serial port. The unit can produce tone sequences indicating various status conditions.

When the configurable Hold control line is asserted, either all card reading is disabled, or the module will buffer one card read and ignore subsequent reads until the line is released.

The OEMI50 has an Open Collector output, which is a normally-open logic output controlled by a serial command. The output can be latched, unlatched, or momentarily closed for 1-255 seconds.

## Card Compatibility

The iCLASS® OEM150 Contactless Smart Card Module is compatible with all iCLASS credentials. The module's versatility allows it to read credentials meeting several ISO standards:

- I5693 – read/write; 2k bit (256 Byte), 16k bit (2k Byte), and 32k (4k Byte) iCLASS credentials
- I4443A - read only (MIFARE® card serial number)
- I4443B read-write; 16k bit (2k Byte), and 32k (4k Byte) iCLASS credential

## Application Support

HID offers Certification Training, as well as a Software Developer's Kit (available separately). See HID Application Note 28 for details.

## Mounting

The module should be mounted on non-metallic standoffs, or held in place by plastic clips, by gluing or by potting. Nearby metallic components may reduce the card reading distance of the module. The module will not read cards or tags if completely enclosed in a metallic enclosure. (If a metal enclosure is required, the module should be placed behind a non-metallic bezel.) Do not drill any mounting holes through the board.

## Environmental

The module must be epoxy potted or installed in a watertight enclosure if used in outdoor environments.

## Antennae

Consult Factory

## Expansion Modules

Consult Factory

## Part Numbers

Base Part Number: 3121

## Options

Key Management - Standard or Custom  
 Selectable Output Type (for MIFARE Cards)  
 Standard Termination: none, solder pads provided  
 Programmable LED/Beeper Operation

## Typical Maximum Read Range

Dependent upon enclosure design, materials used, and proximity of metal components.

## Dimensions

2.441" x 1.102" x 0.611" (6.200 x 2.800 x 1.550 cm)

## Material

FR-4 Fiberglass laminate

## Power Requirements

Nominal input: 5 VDC  
 Range: 5 – 16 VDC reverse voltage protected  
 Linear supply recommended  
 (Other types may degrade performance)

## Current Requirements (Avg/Peak)

42/70 mA @ 5 VDC

## Open Collector Rating

50 mA @ 12 VDC

## Operating Temperature

-31° to 150° F (-35° to 65° C)

## Operating Humidity

5% to 95% relative humidity non-condensing

## Weight

.582 oz. (16.511 g)

## Transmit Frequency

13.56 MHz

## Pending Certifications

UL 294 Recognized  
 (US and Canada) OEM or integrator must secure regulatory approvals, for the entire integrated device, consisting of the module and OEM components.  
 IP55

## Cable Distance

Wiegand Interface – 500 feet (150 m)  
 UART – 1 foot (30 cm)  
 RS232 - 150 ft. (45 m)  
 RS485 - 5000 ft. (1524 m)  
 USB - 10 ft. (3 m)  
 Recommended cable is ALPHA 1295 (22AWG)  
 5-conductor stranded with overall shield or equivalent. Additional conductors may be required to connect all outputs.

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**ACCESS** experience.

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