

S813A FingerPrint Proximity Access Control Reader
TECHNICAL DESCRIPTION OF OPERATION

The S813A FingerPrint Reader's main purpose is to retrieve identification codes and fingerprint templates from passive Mifare/DESFire cards, and then prompt the user to identify himself via his fingerprint. If the user's finger print matches the template retrieved from his identification card then the retrieved identification code is passed on to the connected Access Control System.

Depending on the application mode set, the user may additionally be prompted to enter a PIN through a keypad. User prompts and acknowledgements are made via a 16 character LCD.

The maximum read range is about 1". The unit is connected by cable to an Access Control System (ACS) controller which provides the necessary power and control/interface signals.

The circuitry is contained on one PCB which is mounted in an 'L' shaped plastic front enclosure (130mm x 180mm x 50mm approx). Part of the PCB (approx 30%) is set aside for the antenna. The remainder of the PCB houses the rest of the circuitry, namely the micro-controller , the r.f. controller chip, the LCD, the sounder, a tamper switch, the finger print module and interfaces to a membrane keypad, the ACS controller and a host PC. The interface to the ACS controller / Host PC is made via an 8-pin removable terminal block. The front enclosure hooks into mating features at the top of a plastic backplate which is intended to be screwed to a wall. The front is then secured to the back by two screws at the bottom of the unit, the cable to the unit passing through a large hole in the backplate.

The power supply operating range is 9V - 14V d.c. which is used to power the current loop comms to the ACS controller. A 5V regulator powers the remainder of the circuit including the antenna drive.

The antenna is a printed coil that emits a 13.56MHz magnetic field. The field 'powers up' a passive transponder or tag which is brought into the vicinity of the antenna. The transponder, when powered, operates as a field disturbance device allowing two-way communication to take place between the reader and the card. The field is switched on continuously and modulation of the field is carried out by a dedicated device that is manufactured by Philips for the purpose.

The control processor handles the bi-directional communications between the reader and the controller, responding to commands received and passing card data and status information back to the controller. The control processor also carries out housekeeping tasks such as scanning the keypad and monitoring the tamper switch.

Fingerprint verification is carried out using a third party module which is mounted on the main PCB and which is connected to the micro controller via an internal RS232 serial link.

The reader may also be used as an enrolment reader. In this mode, the current loop comms to the ACS controller is replaced by an RS232 link to a PC. During enrolment the PC prompts the 'enrollee' to present his fingerprint to the reader to collect a fingerprint template and later instructs the reader to write access code details and fingerprint template details to a card.