Zebra Technologies

P430I Printer Description

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The Zebra P430i is a card printer that can print on both sides of a PVC card in one pass through the printer. The Zebra P430i uses color dye-sublimation ribbons or thermal transfer ribbons to transfer digital images to a PVC card. These cards can be used for identification, loyalty cards, or marketing purposes.

Options for this printer include Ethernet, magnetic card encoding, contact and contact-less smart card encoding. Ribbon recognition and security is maintained through RFID technology within the printer. The RFID board and the contactless smartcards use separate transmitters each operating at a frequency of 13.56 MHz in the ISM band.

The RFID system uses an I●CODE1 format and conforms to ISO 15693 specifications.
The RFID system is contained on a single PCBA which holds the loop antenna, impedance matching network, RF interface IC and digital controller IC. The design is optimized for short range lower power operation.

Two types of Contact-less smart cards are supported which require a different modules to be installed. These are HID I-Class and MIFARE format smart cards, which conform to the ISO14443 specification. The system consists of a transceiver module and an antenna module mounted on a small snap-in assembly mounted in the printer top case. The same antenna module with integral matching network is used for both types of smart card systems.

The HID I-Class system uses HID OEM50 modules. The iClass OEM50 exciter modulates a 13.56MHz carrier signal in accordance with ISO/IEC 14443-2 and ISO/IEC 15693-2. The modulated carrier is then filtered to suppress harmonics before driving the antenna. The output impedance of the exciter is 50 ohms for driving remote antennas through a coax cable and the impedance matching network of the antenna matches the impedance for maximum power transfer. The OEM50 generates a 13.56MHz signal, referred as the carrier, at the input of the reader antenna that is transmitted in the form of magnetic fields. The magnetic field generates a voltage across the card antenna and when that voltage reaches sufficient magnitude the chip on the card will power up and begins communicating with the reader by modulating the impedance seen by its antenna. The changing impedance on the card changes the mutual inductance between the antennas, which in turn, causes a change in the magnitude of the exciter signal that drives the reader antenna. It is this change in the exciter signal amplitude that allows reverse communications form the contact-less card.

The MIFARE system uses a Phillips supplied module to support the MIFARE encoding format. The operation is similar to the I-Class described above and conforms to the ISO14443 specification.