P330I Printer Description

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The Zebra P330i is a single sided card printer that can print monochrome or full color images on a PVC card in one pass through the printer. The Zebra P330i 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.

Contact-less smart cards are supported using the popular MIFARE format smart cards, which conform to the ISO14443 specification. The system consists of a transceiver module and an antenna module mounted in the printer case. The antenna module with integral matching network connects via coaxial cable and MMCX connector to the transmitter module.

The Mifare Contact Less reader uses a GemAlto GemProx module. The GemAlto GemProx exciter modulates a 13.56MHz carrier signal in accordance with ISO/IEC 14443 A&B 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 GemProx module MIFARE system is based upon a Phillips RF ASIC to support the MIFARE encoding format, more detail data is available on the Phillips website and in the attached G8378000-001 data sheet.