R110Xi Operation & Description

Zebra's R110Xi can read, encode, and print on RFID smart labels. Smart labels carry embedded ultra-thin UHF RFID transponders. Transponders contain thin antennas and integrated circuits that can be read, programmed, and reprogrammed using non-contact radio waves. RFID smart labels allow for non- line of sight reading of the data contained in the IC and feature anti-collision technology, which lets you scan and identify several objects simultaneously, such as totes of supplies.

In addition to standard printer components, the Zebra R110Xi printer contains a Multi-protocol UHF RFID reader, and a strip-line coupler/antenna connected to the reader via a coaxial cable. The reader powers and communicates with RFID smart labels via the coupler/antenna. The reader contains a digital processor and analog signal conditioning circuitry and is located in the electronics enclosure of the printer. The coupler/antenna is located in the print mechanism of the printer in close proximity the RFID transponder when the smart label is in the rest position prior to printing. When the printer receives instructions from a host computer system to print and encode/read a smart label, the printer sends encode/read commands to the reader via a serial communication link, and the reader responds to the printer with data read and/or a status message. The UHF RF signals generated by the reader are turned on only during a printer commanded read or encode operation. The RF signal is a frequency-hopping carrier operating between 902MHz and 928MHz. The modulation pattern is governed by the selected UHF RFID protocol. The Multi-protocol reader supports EPC Class 1, EPC Class 0, Matrics Class 0+, and ISO 18000-6B UHF RFID protocols presently, and may support more protocols in the future via firmware download upgrade. The coupler/antenna is a dual strip-line transmission line fabricated on a two-sided printed circuit board with one side acting as a ground plane. The coupler/antenna is orientated with the ground-plane side down, roughly parallel to the base of the printer. The reader’s transmitter and receiver are both connected directly to the coupler/antenna via the coaxial cable. Back scatter signals from the transponder are received via the same coupler/antenna as is used to transmit to the transponder.