

Operation Description

1. General Description

The equipment contains an RFID module operating at 13.56 MHz, which is an ISM (Industrial, Scientific, and Medical) band frequency commonly used for proximity cards, NFC, and RFID communication.

The RFID function is used for short-range identification and data exchange between the device and a passive RFID transponder/tag.

2. Operating Principle

- The RFID reader generates a carrier signal at 13.56 MHz using an internal crystal oscillator and RF circuitry.
- The carrier signal is transmitted to an antenna pattern that creates an electromagnetic field.
- When a passive RFID tag enters the field, it is powered through electromagnetic induction.
- The tag communicates with the reader by load modulation of the carrier field. The reader demodulates this response and processes the received data.

3. Modulation and Data Transfer

- Carrier frequency: 13.56
- MHz Modulation type: ASK (Amplitude Shift Keying) / Load Modulation (depending on communication direction)
- Data rate: up to 106 kbps (typical for ISO14443 Type A)
- Communication standard: Supports ISO/IEC 14443 (Type A/B)

4. Antenna

- Antenna type: Integrated loop antenna (coil antenna) on the PCB
- Antenna is matched to 50 Ω using a matching network (capacitors and inductors).