



MOTOROLA

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Exhibit 12 – Operational Description

FlexPass™ Serial Mid-Range Reader

FCC ID: E9USER610

Model No. Serial 610

12.0 Operational Description

The hardware for FCC Certification submittal is the Motorola SERIAL-610 125 kHz FlexPass Serial Mid-Range Reader. The SERIAL-610 reader is a modular, miniaturized, and rugged low power radio frequency reader designed for applications such as identification systems, security systems, Access Control, and data collection. The SERIAL-610 mounting bracket accommodates a wide variety of foreign and domestic electrical utility box applications and can be easily modified for unique circumstances.

The reader transmits a continuous low-power radio frequency (RF) signal which serves as a clock and energy source for RFID cards and tags. Presenting a tag as shown, in Figure 1 below, the hand serves as a required ground reference and activates the tag when in proximity to the reader. The RFID tag responds to the reader with a modulated unique identification number. In turn, the reader demodulates the tag signal, converts it to the pre-determined Wiegand, Magnetic Stripe-compatible, or RS-232 output format and sends the decoded data to an external host controller via the interface cable. In response, the controller takes appropriate action (i.e. opens door, etc.). Note: This particular model of reader is not conducive to a hands free application (e.g.) reading tag while within a purse, briefcase or wallet is not recommended.

The Smartcard Access Control Reader System Diagram is shown as Figure 1.

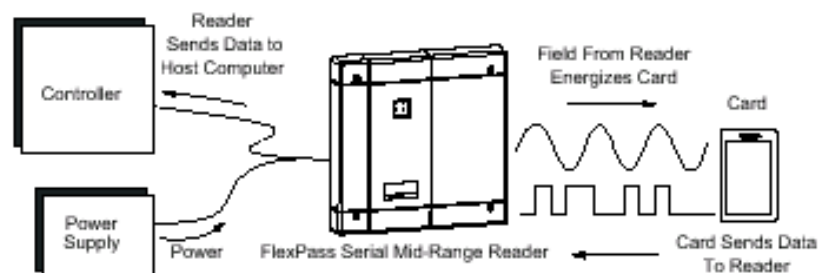


Figure 1 - Serial 610 Smartcard System Diagram

Frequency of Operation

- Excitation	125 kHz
- Data Carrier	62.5 kHz

Input Power

The electrical interface shall be as noted below:

- Input Voltage	+5 Vdc to +14Vdc
- Input Current (@ nominal +12 Vdc)	140 mA typical

I/O Interface

The following electrical interface types are supported with a single cable.

- RS-232/485

Read Range

The read range is dependent on the input voltage, installation and card type. The read range can vary from 17.8 cm to 25.4 cm.

Antenna characteristics

The Serial 610 utilizes an exciter coil (P/N 07502-001) and a receiver coil (P/N 07511-001). The reader excitation frequency is 125 kHz. The appropriate capacitance is provided across the secondary winding of the exciter coil to establish the resonant frequency. The receiver coil captures the 62.5 kHz modulation frequency and provides nullification of the 125 kHz carrier frequency.