



MOTOROLA

*Integrated Information Systems Group
8201 E. McDowell Road
Scottsdale, AZ 85252-1417*

Exhibit 12 – Operational Description

BiStatix™ BDR-1000

RFID Tag Reader/Programmer

FCC ID: E9U05866001T1

Model No. BDR-1000

12.0 Operational Description

The BDR-1000 is a BiStatix™ Radio Frequency Identification (RFID) device. The product is capable of either reading or programming RFID tags. The primary intent is that this product be used as a Development Station for the design of paper BiStatix™ cards and tags. This technology utilizes Electric Fields and Capacitance coupling to complete the RF link between the electronics module and the identification device.

The following is a basic theory of the internal operation of the BDR-1000 based upon the attached block diagram.

Input Power and Conditioning:

Power is applied to the electronics module from an inline AC Universal Power Supply. The supply delivers +/- 12 volts and 5 volts DC through a 5-pin DIN connector located on the connector panel of the enclosure.

Micro Controller and Digital System:

An internal micro controller is used to control all serial communication to and from a host controller. It is also used to demodulate the signal that is received from the RFID tag as well as control both a LED and beeper used to provide user feedback.

Auxiliary Inputs, Outputs and Switches:

The enclosure connector panel consists of an on/off switch and various other connectors. The DB9 is a standard RS232 I/O used to communicate with a host controller. In addition a Dual RJ45 connect is available for use with RS485 if so required. A DB15 connector is also available that will support external connectors in the future but at this time is not active. Finally the upper top of the face contains a LED that is used along with an internal beeper to provide feedback to the user for both read and write operations.

Antenna Plates:

Receiver and exciter antennas are contained on the antenna PCB. This PCB is mounted just beneath the label on the enclosure. The exciter antenna is the source plate for capacitive coupling to the RFID tag and provides the 125 kHz excitation signal. The receiver antenna is the receive plate for the RFID tag and receives an AM (at 62.5 kHz) exciter signal.



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Demodulation and Receiver Amplifier:

The receiver signal picked up by the receiver antenna is fed to the Receiver Amplifier. This amplifier amplifies the 62.5 kHz AM signal and rejects the 125 kHz exciter component. The output of the receiver amplifier is then fed to the internal controller for BPSK demodulation.