

Product Bulletin

TIRIS™ Series 5000 Reader System

Key features:

- Tailored RFID system for the outdoor drive through environment.
- Supports highly secure wireless communications.
- Well-defined read zone for accurate billing.
- Modular for flexibility of integration

Description

The Series 5000 Reader System works in conjunction with TIRIS transponders to provide a secure, handsfree data link for effortless point-of-sales purchasing. The custom design is based on the technical core competencies of traditional low frequency TIRIS applications and the higher frequency RFID systems engineered for electronic toll collection.

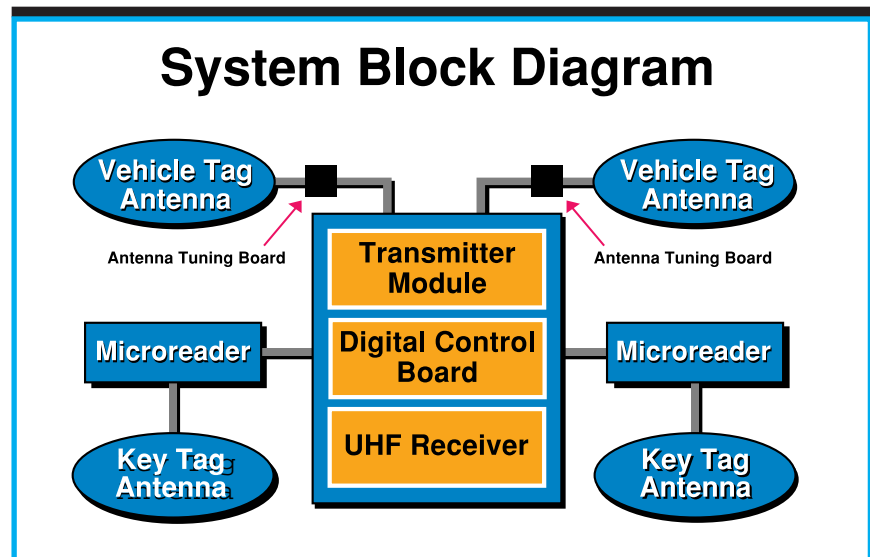
The reader system can be installed within gasoline dispensers for “pay-at-the-pump”, and at retail POS locations like checkout counters and drive-thru windows to speed payment transactions and provide true customer convenience.

The system includes six main elements:

- Digital Control Board
- UHF Receiver
- Transmitter Module
- Antenna Tuning Board
- MicroReader*
- LUHF Uplink Antenna

The Digital Control Board is the heart of the system. It activates the tags and handles tag-to-reader communications. It communicates with the host computer through a 485 bus. This board interfaces to the Transmitter Module, UHF Receiver, and the dispenser power supplies.

The UHF Receiver Module handles the uplink signal from the



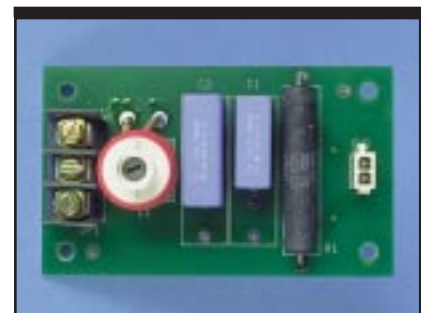
System block diagram.



Top view of Digital Control Board with UHF receiver.



Top view of Transmitter Module.



Top view of Antenna Tuning Board.

vehicle tag. It receives the signal from the vehicle tag that transmits data on a UHF carrier, and down converts and demodulates this signal to binary data. The UHF Receiver also includes the master oscillator for the Digital Control Board (DCB) and provides all clock signals for other elements

* See Data Sheet 11-06-22-069 10/95 on website for more details.

within the DCB to keep signal paths as short as possible. The UHF receive antenna connections are made via SMA connectors with as short a run as possible.

The Transmitter Module contains all the functions to activate vehicle tags. The module includes a carrier board onto which are mounted two transmit-only Radio Frequency Modules (RFMs), the

power supply, oscillator and tuning connector for the RFMs, logic circuitry to determine RFM selection, power level adjustment capability, and a pulse width modulation circuit.

The Antenna Tuning Board allows the resonance tuning of the low frequency downlink antenna to match with the Transmitter Module to compensate for prod-

uct tolerances at manufacturing, to achieve the maximum field strength. The antenna circuit is tuned to resonance by adjusting the ferrite core of the on-board coil.

Specifications:

Device name Part number:	Digital Control Board RI-CTL-DCUA RI-CTL-DCEA*	UHF Receiver RI-RFM-HRUA RI-RFM-HREA*	Transmitter Module RI-MOD-OUA	Antenna Tuning Board RI-MOD-RATA
Size (LxWxH) inches	8.25 x 8.0	5.2 x 3.12 x 1.5	7.57 x 4.5 x 2.18	3.94 x 2.37 x 1.5
Size (LxWxH) mm	210 x 203	132 x 79 x 38	192 x 114 x 55	100 x 60 x 38
Operating temperature	-20 C to 85 C	-20 C to 85 C	-20 C to 70 C	-20 C to 70 C
Storage temperature	-40 C to 100 C	-40 C to 100 C	-40 C to 85 C	40 C to 85 C
Operating frequencies	134.2kHz downlink	850-950 MHz uplink (programmable at manufacturing)		
Downlink signal modulation	--	--	AM (on-off keying)	--
Downlink data rate	--	--	1 kBd	--
Uplink signal modulation	--	FM	--	--
Uplink data rate	--	20 kBd	--	--
Standards compliance	FCC, Part 15, A			

*Devices are designed to work with the 868.4 MHz uplink frequency and comply to ETSI regulations.

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