1.0 SCOPE

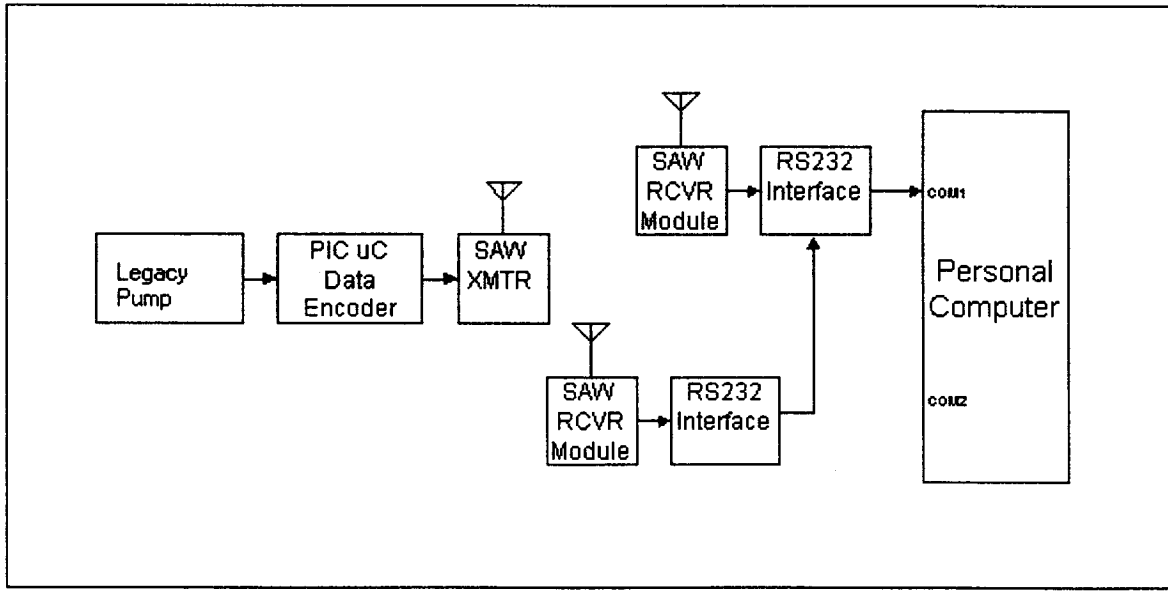
Summary

A one-way RF data communications system that will notify a personal computer when message is received from a Legacy Pump. This system will have two parts: a transmitter and a receiver. The transmitter accepts a data string from a Legacy pump and transmits the data. The receiver demodulates the transmitted RF signal and forwards it to a personal computer. The CRC check code will accompany the transmitted data to insure communications integrity. A single receiver can be used to monitor up to 40 transmitters.

Block Diagram

A one-way RF communications system with the following components (see the diagram below):

1. A microcontroller-based data encoder.
2. A discrete SAW-based transmitter including antenna.
3. A dual SAW-based receiver module including antenna.
4. An RS-232 interface to a personal computer.

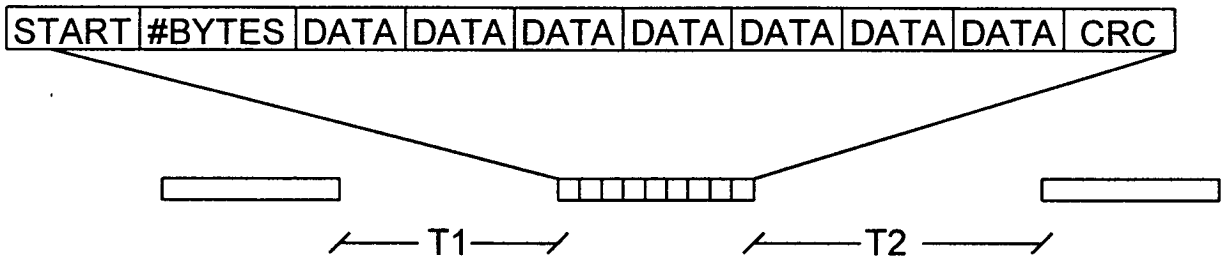


Transmitter

The Microcontroller will signal it is ready to receive data by transmitting an ASCII "R" tp the pump indicating "Ready".

The microcontroller will accept and buffer serial data. The transmitter will respond to the pump with an ASCII "B". Indicating "Busy".

The transmitter [keys]will transmit the resultant packet several times at random intervals. The diagram below shows a transmit data string.



After the transmitter is finished transmitting the data, it will send an ASCII "R" to the pump. To indicate it is ready for the next packet.

The Transmitter is powered from the pump communications port.

The transmit frequency for US and UK applications is 418 MHz. The transmit frequency for all EC countries except the UK will be 433.92 MHz. The transmitter circuit can be used at all these frequencies with minor modifications.

Receiver

More than one receiver, with separate antennas, may be used. This provides spatial diversity to improve communications integrity in cases where multipath signal cancellation can occur.

Each receiver uses a small whip antenna and an RF Monolithics hybrid receiver module. These receivers use a SAW-based ASH architecture making them small, low cost and low power. The raw data output of both receivers is forwarded to a personal computer via an RS-232 connection. Transmissions received correctly by either receiver will be sent to the computer. Transmissions received with CRC errors are discarded.

2.0 DOCUMENT CITATIONS

AC Adapters
Transmitters
Receivers

3.0 ELECTRICAL REQUIREMENTS

3.1. THE RECEIVER IS POWERED FROM A SIMS DELTEC AC ADAPTER. EACH AC ADAPTER CAN POWER UP TO THREE RECEIVERS. CONNECT THE AC ADAPTER TO THE RECEIVER CLOSEST TO THE COMPUTER.

U.S.	71-0266
UK	71-0267
Euro	71-0268
JA	71-0273
VK	71-0274

3.2. DISTANCE

TBD

3.3. ERROR RATE

TBD

4.0 PHYSICAL REQUIREMENTS

4.1. DIMENSIONAL

See drawings for device dimensions.

5.0 ENVIRONMENTAL

5.1. OPERATING ENVIRONMENT

- Temperature: 2°C (35.6°F) to 40°C (104°F)
- Humidity: 90% relative humidity maximum, non-condensing.
- Atmospheric Pressure: 70 kPa (10.2 PSI or 10,000 feet above sea level) to 106 kPa (15.4 PSI).

5.2. STORAGE ENVIRONMENT

- Temperature: -20°C (-4°F) to 60°C (140°F)
- Humidity: 90% relative humidity maximum, non-condensing
- Atmospheric Pressure: 70 kPa (10.2 PSI or 10,000 feet above sea level) to 106 kPa (15.4 PSI).