

## PRODUCT SHEET

### TRANSIT TIME — 900 MHZ WIRELESS MODBUS AUTOMATIC METER READING (AMR) SYSTEM

For  
Measurement of On-Farm Deliveries  
( 12" to 72" pipe diameters)

#### Features:

- Transit Time Ultrasonic Wetted Transducer technology
- Provides accurate volume and flow measurements
- Radio Module Integrated to AMR RTU
- Low power radio with sleep mode
- FCC Approved



12" x 10" NEMA 4X Enclosure



#### OVERVIEW

The Axiom-Blair AMR RTU is designed for remote flow metering of On-Farm Irrigation systems. The utilization of the Siemens developed SonoFlow Ultrasonic Flow Meter allows for greater accuracy and reliability in the collection of flow-metering data. The RTU is housed in a 12" x 10" weather-proof NEMA enclosure with an LED display for the read-out of flow accumulations and flow rate on the front panel. A 20W 12 V solar panel allows the RTU to be used as a stand-alone system in remote locations. Transmission of the flow information is accomplished by an integrated spread spectrum wireless transceiver communicating with a centrally located SCADA controller. Over 1000 nodes are available for the system with each node handling up to 128 meters.

#### CDR-9150 DATA TRANCEIVER.

The CDR-9150 Spread Spectrum Data Transceiver allows for the easy integration into OEM applications and is FCC and Industry Canada approved. The field upgradeable unit features fast throughput (50kbps RF data rate) and a powerful Windows™ based path management software with transparent or guaranteed point-to-point or point-to-multi-point data deliver modes.

#### SIEMENS SONOFLO.

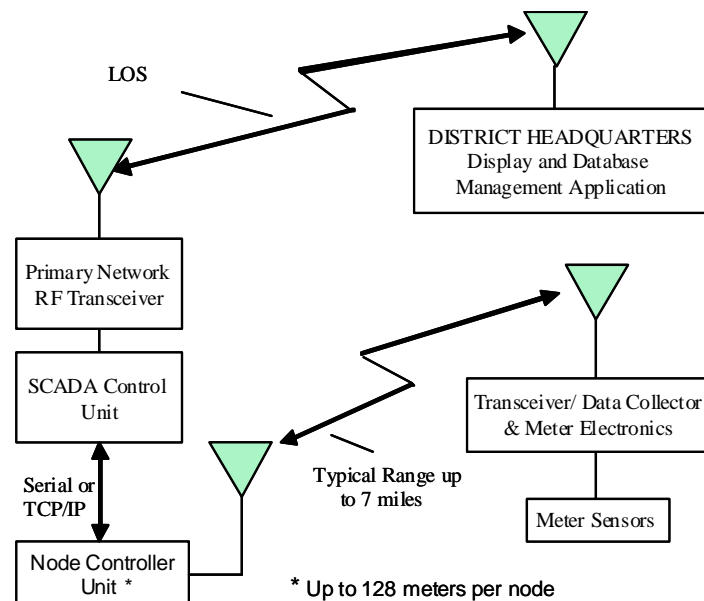
One of the keys to the SONO flow meter performance is the *direct shot ultrasound transmission technique*. This advanced transit time technique, using wetted transducers, shoots the ultrasound pulses directly to the receiving transducer without bouncing them off the interior walls of the pipe. This way, the presence of any scale build-up on interior pipe walls will not weaken or degrade transmitted signals allowing for greatly improved signal

#### RIO 9F I/O MODULE.

The RTU Modbus interface is the Coyote Data-Com RIO 9F I/O module. The RIO 9F Multi-board provides an easy way to collect analog and digital signal information. The unit features RTS/CTS support and programmable baud rate and parity. The on-board LED indicators show status, poll, response, I/O and error.

#### WIRELESS SCADAPACK.

The Control Microsystems SCADAPack Controller provides intermediate node control, storage and forwarding of the relevant meter information. Use of real-time Modbus communication protocols simplifies integration with software and remote I/O applications used to monitor the fluid flow measurement.



## AMR RTU PROCESS DIAGRAM



HMI Software



1000 m W — 900 MHz SS Radio for Transmission up to 7 miles with 20 W Solar Panel and Yagi Antenna



PDA can capture data while observing deliveries



Siemens SONOFLO Ultrasonic Flow Meter  
18" Concrete Pipe



AMR RTU Installed in Metal Vandal Box

### Transit Time Ultrasonic Meter

Ultrasonic technology  
Features infrared technology giving complete wireless operation for sharing data  
Advanced Transit Time Technique with wetted transducers  
Measures volume, flow, sound velocity and temperature  
Media temperature  
-328 to +400 °F  
-200 to +200 °C  
Max. Measuring Error  
0.5% of reading  
Measuring Range  
0-2,000,000 GPM  
0-450,000 m<sup>3</sup>/h  
Real-time measurements every 2 seconds  
Accuracy: Better than  $\pm 1\%$  of actual flow  
Integrated LCD display receives and stores updated measurements  
Measures accumulated volume  
Actual flow running through the meter displayed  
Ability to set billing date to store and display consumption status on account date  
Check peak flow data, the highest flow rate seen over the past 3 months  
Error log enables you to see if there have been errors and what kind

### MODBUS I/O Module

4 channels of 12 bit A to D Loadable from input registers 30001-30004  
Supply voltage monitor loadable from input register 30005  
3 channels of isolated inputs read as status inputs 1 to 4 (00001-00003)  
3 channels of open collector output written as coil 1 to 4 (00001-00003)  
3 input channels with pre-settable 32 bit pulse counters  
Slave address settable from 1-255 using on-board DIP switch  
On-board LED indicators show status, poll, response I/O state and error  
RTU MODBUS interface

## SPECIFICATIONS

### 900 MHz Spread-Spectrum Data Transceiver

Frequency—902-928 MHz	Modulation—Direct FM (FSK)
Frequency Control—PLL Synthesizer	RF Data Rate—50 kbps
Transport—Transparent Point-to-Point, Point-to-Multipoint, Multipoint-to-Multipoint Broadcast and Guaranteed delivery	Data Flow Control— Hardware using CTS
Data Interface—Asynchronous Hopping Channels—50	Transmitter Output—1 Watt
Configuration—Windows™ Application	Error Detection—16-bit CRC
Duty Cycle—100% receive, 100% transmit	Input Voltage— 9-28 VDC
Data Interface Rate—2400, 4800, 9600, 19.2k, 56k bps	Input Current—
Temperature -30 to +70 °F	115 mA Receive Mode @ 12V
Range—typically, up to 7 miles	75 mA Receive Mode @ 24V
Data Encoding—Proprietary Method	910 mA Transmit Mode @ 12V
Receiver Sensitivity - 105 dBm usable	450 mA Transit Mode @ 24V
	Regulatory—
	United States (FCC) CFR 15.247 Approved
	Canada (IC) RSS210 Approved