

BENTEK SYSTEMS LTD

SCADA and Telemetry Solutions

**SCADALink Sensor Radio
SR-900T / SR900R**



Wireless Simplex I/O Controller

User Manual

Version V1.06 for SCADALink SR-900T / SR-900R

(Last revised Mar 8, 2012)

BENTEK SYSTEMS LTD

315 – 3750 46th Ave. S.E. Calgary, Alberta, Canada T2B 0L1 Ph: (403) 243-5135 Fax: (403) 243-5165
email: support@scadalink.com

web: www.scadalink.com



SR-900T Transmitter

Transmit Power.....1 Watt
 Range.....4-5 Miles (Omni) , >15 Miles
 Yagi (L.O.S.)
 Frequency.....902 - 928 MHz
 Technology.....Frequency Hopping Spread
 Spectrum
 Input Power.....12VDC to 30VDC (Regulated)
 Power Consumption...3 Watts (125mA @ 24VDC)
 Temp Range.....-40C to 70C (-40F to 158F)
 Inputs.....1 x 4-20mA analog (250 ohm
 input impedance)
 2 x +5 to +30VDC Digital
 Dimensions.....4" x 4.5" x 0.7"
 Mounting.....Din Rail
 Environmental.....NEMA1
 Approvals.....Class 1 Div 2
 Antenna Connector.MCX (Female)

SR-900R Receiver

Frequency.....902 - 928 MHz
 Technology.....Frequency Hopping Spread
 Spectrum
 Input Power.....12VDC to 30VDC (Regulated)
 Power Consumption...8.4Watt Peak
 1.8Watts Average
 (350mA@24VDC Peak,
 75mA@24VDC Average)
 Temp Range.....-40C to 70C (-40F to 158F)
 Outputs.....1 x 4-20mA analog (12 Bit
 Resolution)
 3 x Dry Contact Output 0.5A,
 120VAC Max
 Max Loop Impedance..450 to 1350 ohms for power
 supply voltages of 12VDC to
 30VDC
 RSSI.....0-5VDC on RSSI Pin
 Dimensions.....4" x 4.5" x 0.7"
 Mounting.....Din Rail
 Environmental.....NEMA1
 Approvals.....Class 1 Div 2
 Antenna Connector..MCX (Female)

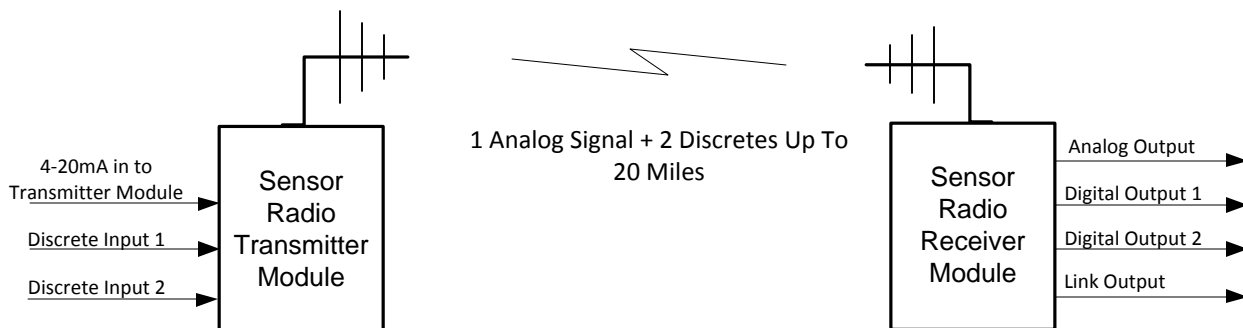
Description Of Operation:

The SR-900T Transmitter comes with 1 Analog & 2 Discrete inputs. Inputs on the Transmitter are replicated as matching outputs on the SR-900R Receiver. The Receiver also has a "Link" Dry Contact output which can be used to shutdown equipment if there is a Link Failure.

NOTE: Each Sensor Radio Transmitter SR-900T is factory configured to send out one internal address code while each Receiver SR-900R is factory configured to decode only one address code. SCADALink Sensor Radios usually ship as a matching Transmitter / Receiver pair with that Receiver's address matched to the Transmitters. The User has no ability to configure these addresses so Transmitters and Receivers cannot be arbitrarily mixed.

Typical End-to-End Application

Sensor Radios are usually used for End-to-End I/O applications to get I/O from one site to another. They are often used as a cost effective replacement for Running Conduit and Trenching.

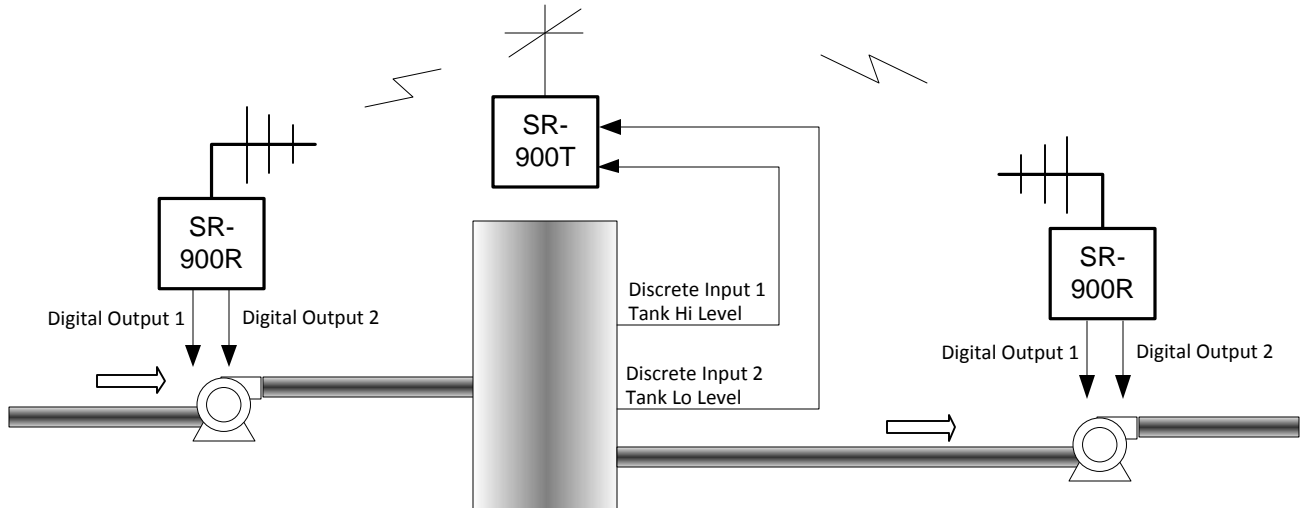




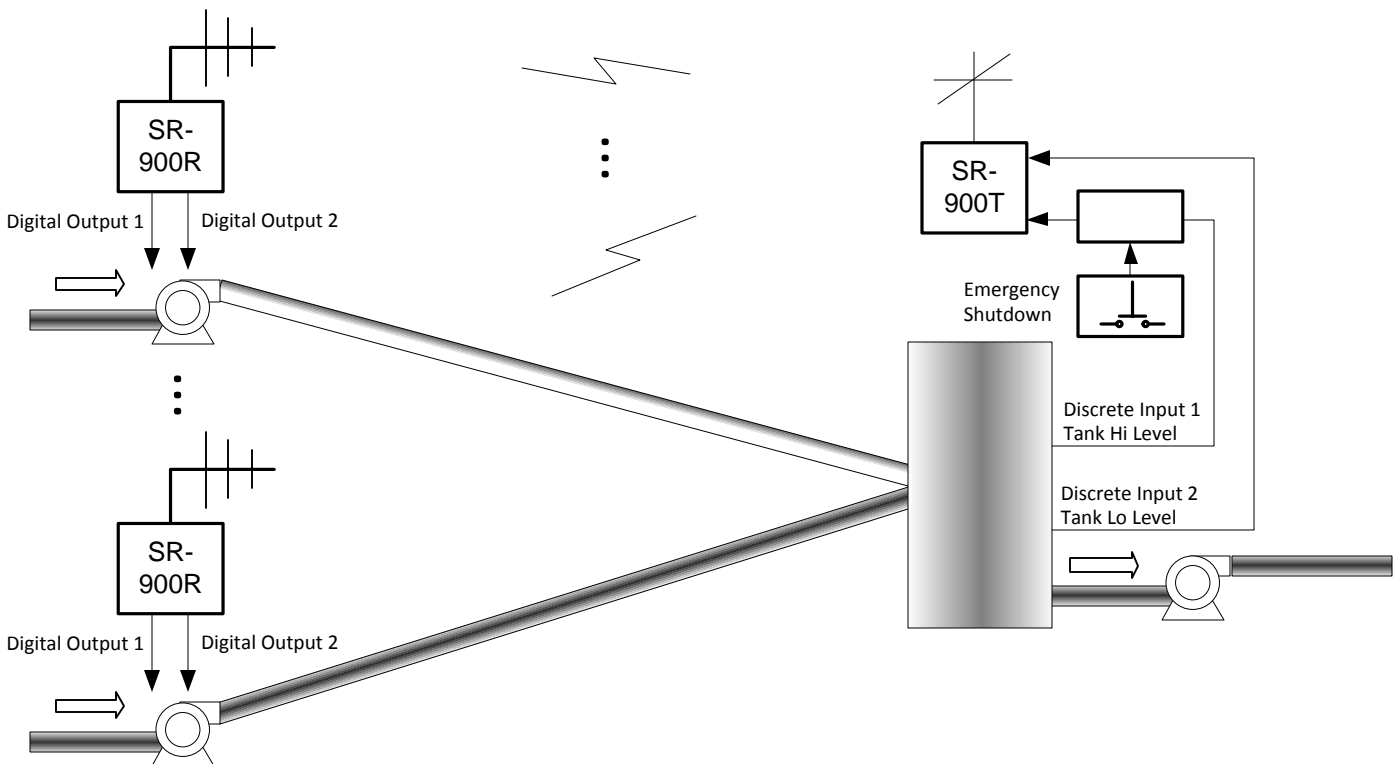
Applications with Multiple Receiver Sites:

Sensor Radios can also be used in systems with a single Transmitter transmitting to multiple Receivers keyed to the same Transmitter. This allows the inputs at the Transmitter to be replicated at all the Receivers. Typical applications are in Pump Control and Shutdown Systems.

Pump On/Off Control:



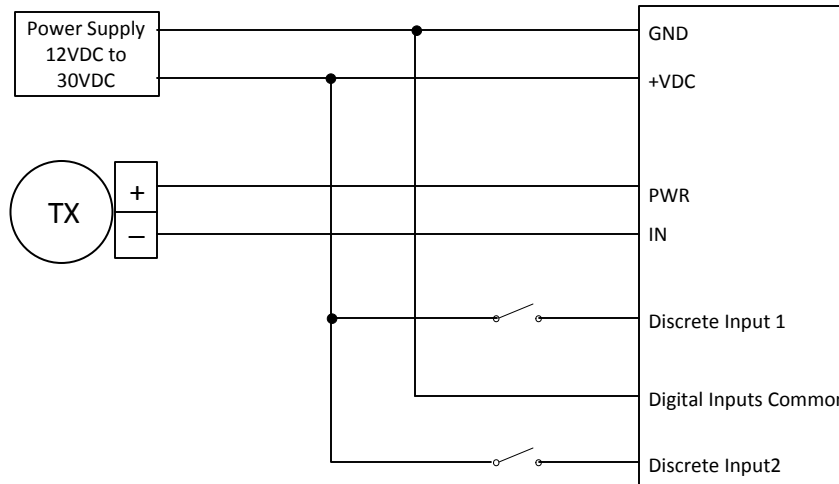
Shutdown System:





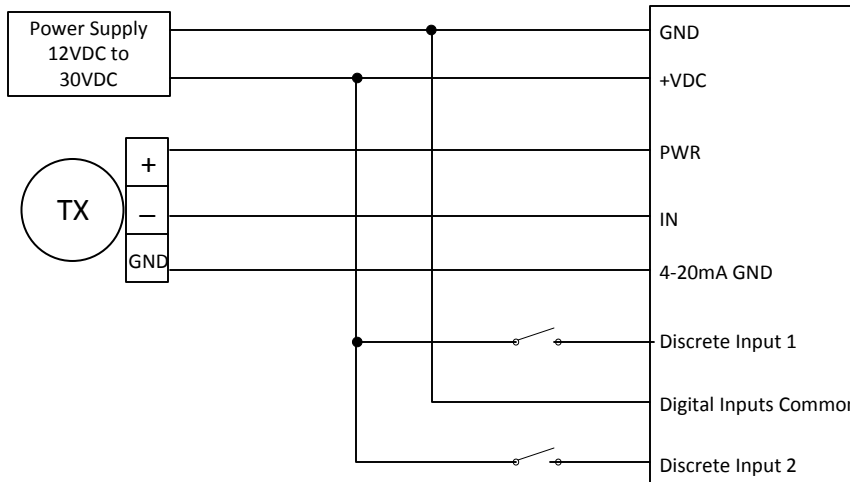
SR-900T Radio Transmitter Wiring Diagrams

Two Wire Loop Powered Transmitter



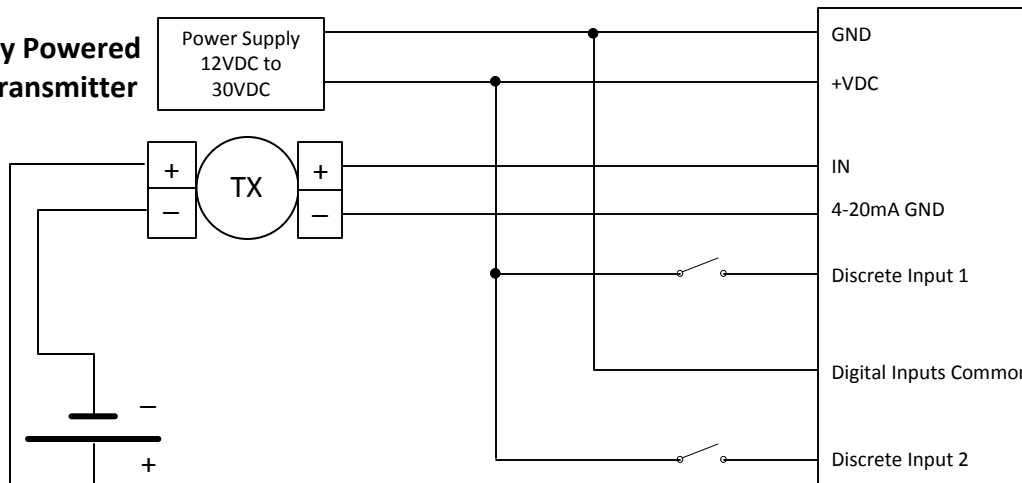
SR-900T Transmitter

Three Wire Transmitter



SR-900T Transmitter

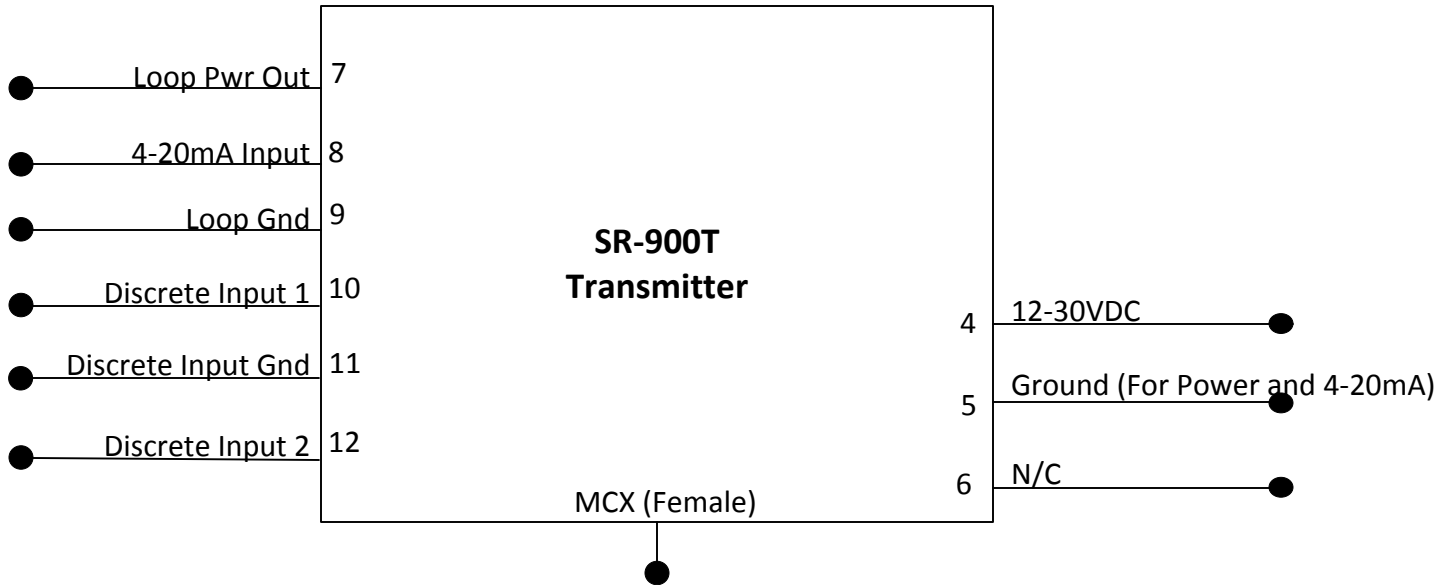
Externally Powered 4 Wire Transmitter



SR-900T Transmitter



SR-900T Radio Transmitter Wiring Diagram



SR-900T Transmitter LED's

RF LED: Solid Green when functioning normally.

LED's 1 and 2 show status of digital inputs 1 & 2. Solid Green = ON.

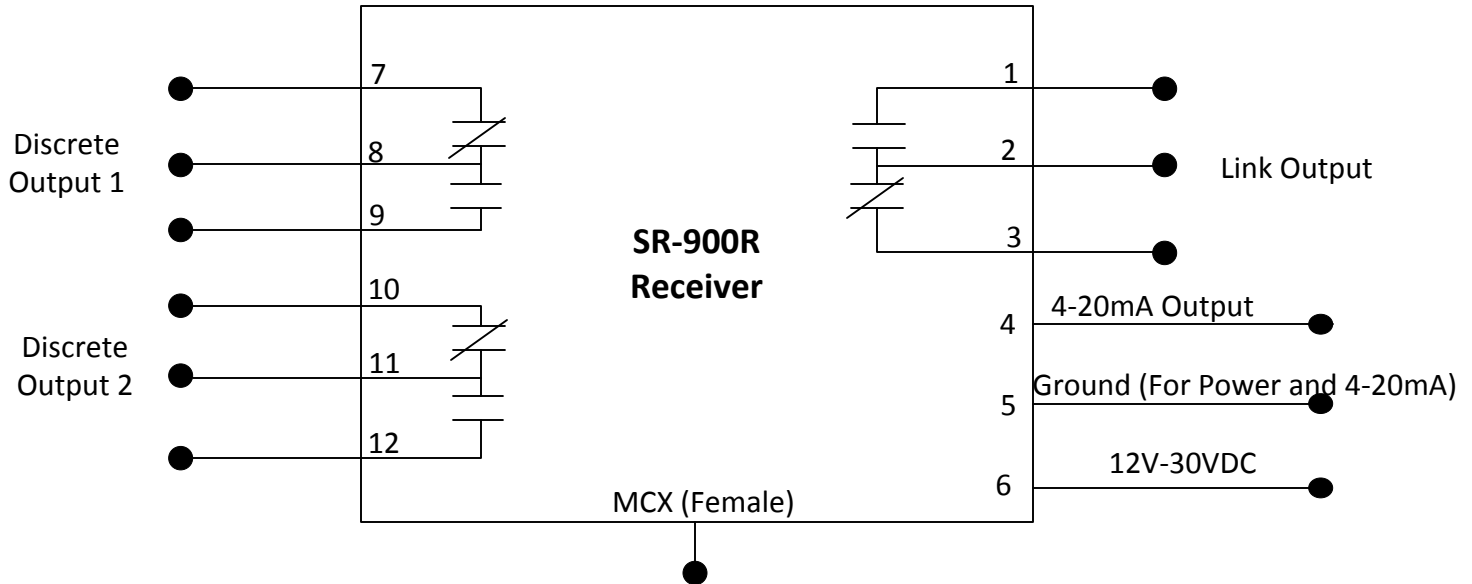
N/C: No Connection

WARNING: EXPLOSION HAZARD

Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous.



SR-900R Radio Receiver Wiring Diagram



SR-900R Receiver LED's

- RF LED Blinks once every 2 seconds when transmitter is OFF or out of range.
- RF LED Blinks rapidly when marginal signal is being received.
- RF LED is solid when a secure link is established.
- LED's 1 & 2 show status of digital inputs 1 & 2. Solid Green = ON.

FCC: This device complies with Part 15 of the FCC rules. Operation is subject to the following 2 conditions:

1. This device may not cause harmful interference.
2. This device must accept interference received, including interference that may cause undesired operation.

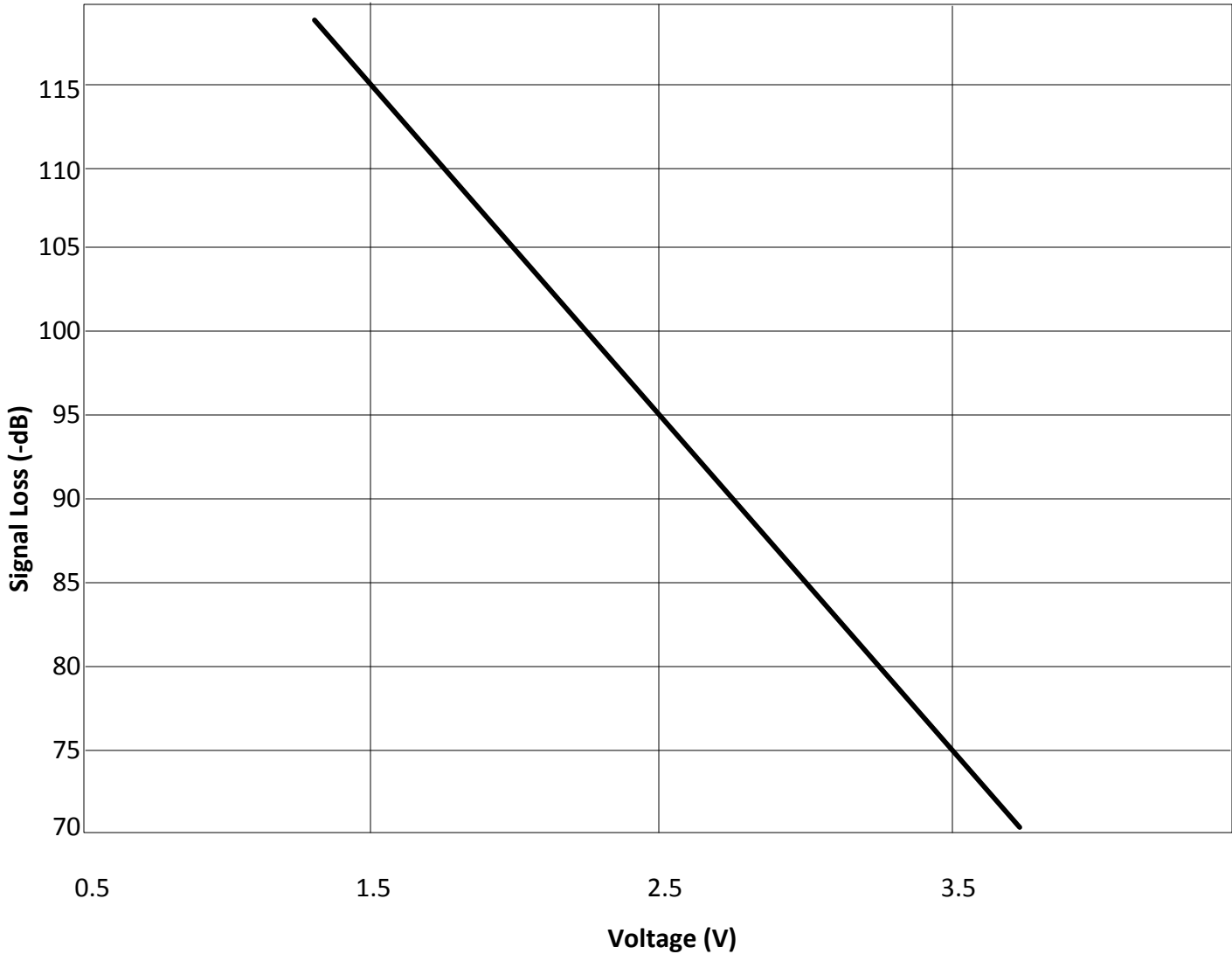
Changes or modifications not expressly authorized by Bentek Systems Ltd. could void the user's authority to use the equipment. The system integrator may only use antennas that have been tested and approved with this radio to maintain the FCC approval. If a system integrator uses non-approved antenna they are responsible for obtaining their own FCC certification.

WARNING: EXPLOSION HAZARD

Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous.



RSSI Chart vs. Voltage



RSSI is a Receiver pin that indicates the Receiver's received signal strength. It is measured by placing the probes of a voltmeter (on a DC Voltage setting) between the RSSI pin and GND. A value of 2.5V or greater is required for proper Receiver operation while a value less than 2.5V will result in potentially unreliable radio operation. If RSSI is below 2.5V, Signal strength at the Receiver can be increased by:

1. using a higher gain antenna
2. better antenna orientation to Transmitter (if Receiver antenna is a directional antenna)
3. moving antenna to a higher elevation (or increasing height of antenna tower)
4. moving antenna to a location where there are fewer obstructions.

**Antenna and Antenna Connections**

Both SR-900T and SR-900R require connection to an antenna for normal operation. Bentek can supply two types of antennas:

1. MCX (Male) Unity Gain Omni Antenna assembly

This is a small Omni Antenna that has a short 1 meter length of MCX cable that plugs directly into the unit. One antenna on each side provides a range of approximately 1 mile Line of Sight (LOS)

2. 6dB YAGI Antenna

A 6 dB YAGI Antenna at each end provides an approximately 20 mile range LOS. A pigtail adapter cable (MCX Male to N) is required to connect to a normal YAGI.