

**IDentity 6204**



# **IDentity 6204 USER GUIDE**

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**FEDERAL SIGNAL  
TECHNOLOGIES**

# Identity 6204

## USER's GUIDE

V1.02

January 26, 2012

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This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

### About Sirit, a Federal Signal Technologies Company

Sirit, a Federal Signal Technologies Company, designs, develops, manufactures and sells Radio Frequency Identification (RFID) technology. Targeted at a diverse set of markets RFID technology has become a core technology for applications including: electronic toll collection, access control, cashless payment systems, product identification, and supply chain management systems including logistics, warehousing and manufacturing, and asset management.



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# Preface

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## Intended audience

This document is intended for those who wish to setup and operate the IDentity 6204 Radio Frequency Identification system. Before attempting to install, configure, and operate this product, you should be familiar with the following:

- Windows-based software installation and operation
- Device communication parameters including Ethernet and serial communications
- RFID reader configuration including antenna placement
- Basic digital input/output control

## What's in this guide

The information in this guide is presented as follows:

**Chapter 1 - Reader Overview:** This chapter provides a brief overview of the IDentity 6204 hardware and software.

**Chapter 2 - Reader Equipment Installation** – This chapter describes how to mechanically and electrically install the reader.

**Chapter 3 - Reader Startup Tool (RST) Software Installation** – This chapter describes how to install the Microsoft Windows RST application.

**Chapter 4 - Reader Operation** – This chapter describes how to initially test a reader and how to operate deployed readers.

**Chapter 5 - Reader Startup Tool (RST)** – This chapter describes the RST and the various functions you can perform with this Microsoft Windows application.

**Chapter 6 - Reader Configuration Tool (RCT)** – This chapter describes the RCT and the various functions you can perform with this embedded reader application.

**Chapter 7 - Configuring Digital Inputs and Outputs** – This chapter describes how to setup the reader's digital inputs and outputs.

**Chapter 8 - Specifications** – This chapter detailed mechanical, electrical, and environmental specifications for the IDentity 6204.

**Chapter 9 - Safety Instructions** – This chapter provides important safety information about the IDentity 6204. All users must read this section before installing or operating this reader.

**Appendix A - Error Handling** – This appendix lists IDentity 6204 errors and warnings. Corrective actions are provided where applicable.

## What's New in this Version

Version 1.0 of this User's Guide is the first release.

## Conventions used in this manual

The following conventions are used in this manual:

**Bold courier** font indicates code entered by the user

**(values)** within parentheses indicate parameters

*(values)* in italics indicate user defined variables.

**<n>** indicates a variable number used in a function that can apply to several different devices such as antennas or I/O ports.

### NOTES

*Important information and other tips are presented in light blue boxes to the left of the applicable section.*



**WARNING:** *Warnings advise the reader that a hazardous condition can be created by a particular action that can cause bodily injury or extreme damage to equipment*



**ATTENTION** *This warning indicates that the device is susceptible to Electro Static Discharge and appropriate precautions must be taken to avoid equipment damage.*



**Caution:** *Cautions advise the reader that a condition can be created by a particular action that can cause equipment damage or result in equipment operation that violates regulatory requirements.*

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# 1 Reader Overview

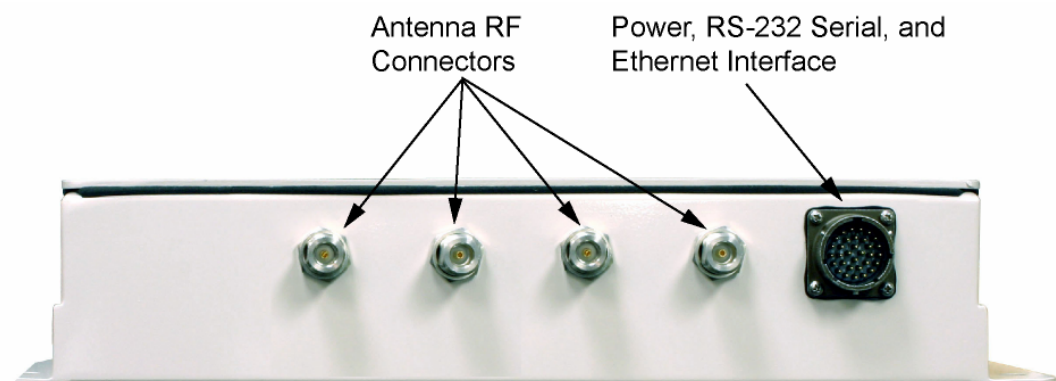
## 1.1. Reader Hardware

The IDentity 6204 is a multi-protocol, multi-regional Radio Frequency Identification (RFID) System that operates in the 860 – 960 MHz UHF band. The reader is configured at the factory to operate within a specific regulatory region (for example: FCC Part 90).



**Figure 1** IDentity 6204 UHF Reader

As shown in the following figure, the IDentity 6204 reader supports four Tx/Rx antennas (not shown). The reader is also equipped with RS-232 serial and Ethernet interfaces.



**Figure 2** IDentity 6204 Power and I/O Connections

## 1.2. Reader Software

The IDentity 6204 is shipped with two software applications that you can use to configure and control the reader.

### Reader Startup Tool (RST)

The RST is a Microsoft Windows based application you install on your computer. With RST, you can view all readers on your network. After selecting a reader, you can modify its communication, network, and operational parameters. You can also read tags, review tag data, and perform diagnostics. This RST is primarily intended for initially configuring a reader prior to deployment. After deployment, use the Embedded Reader Configuration Tool (RCT). Detailed information on the RST is provided in Chapter 5.

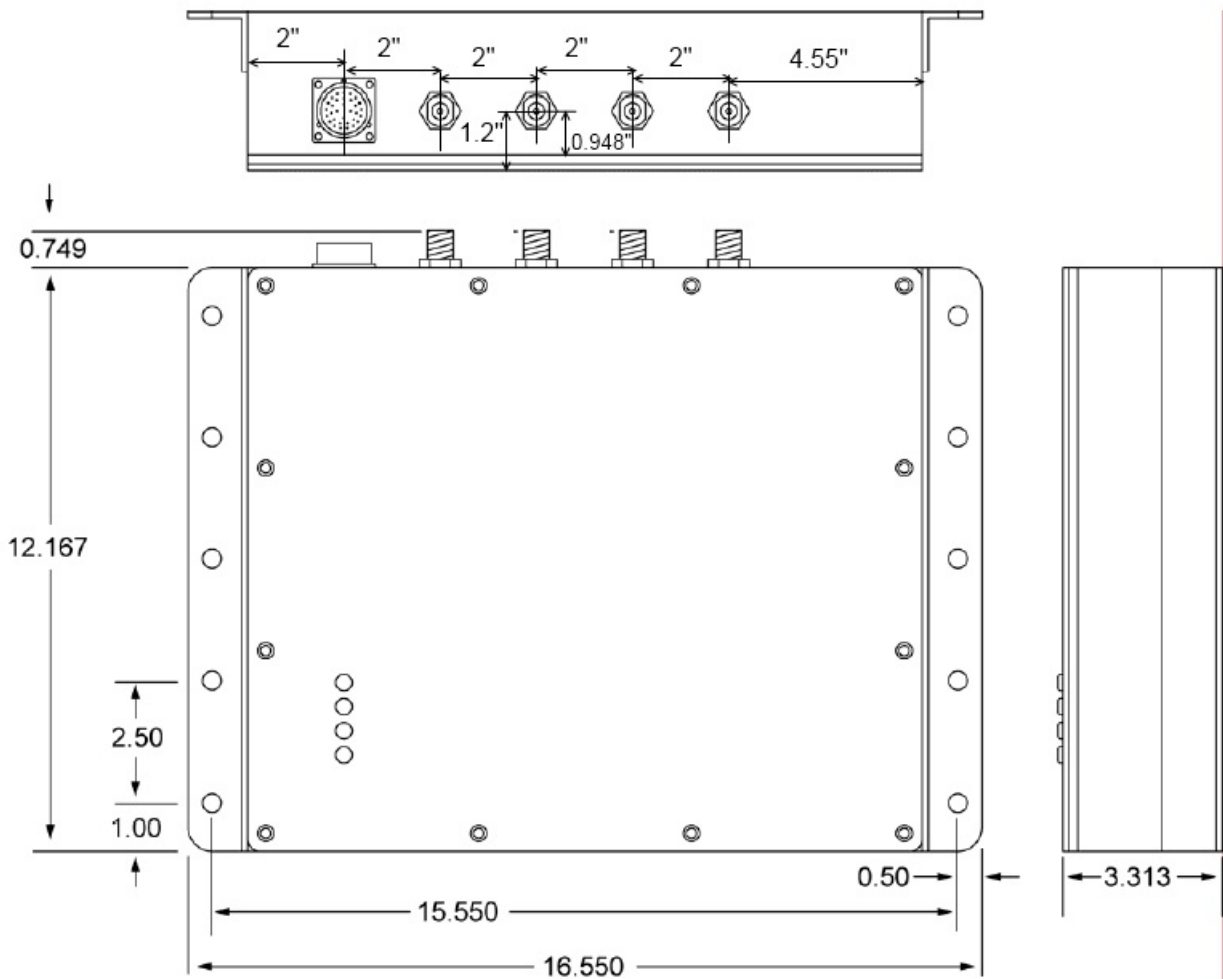
### Embedded Reader Configuration Tool (RCT)

This RCT is an embedded reader application that allows you to access your readers across a LAN or WAN. Enter the IP address of the reader into your Web browser and the RCT allows you to fully modify and operate the reader. With the same functionality as the RST, this application allows you to modify the reader's communication, network, and operational parameters. You can also read tags, review tag data, perform diagnostics, and upload new software. This application is primarily intended for configuring and managing deployed readers. Detailed information on the RCT is provided in Chapter 6.

## 2 Reader Equipment Installation

### 2.1. Mechanical Installation

The IDentity 6204 is available with two mounting flanges suitable for most pole and wall mount applications. Any mounting surface must be able to support a minimum static load of 11.0 pounds (5 kg) plus any additional live load due to environmental conditions.



**Figure 3** IDentity 6204 Mechanical Dimensions and Mounting Hole Locations (Dimensions in Inches)

To mount the IDentity 6204 reader assembly, refer to Figure 3 and perform the following:

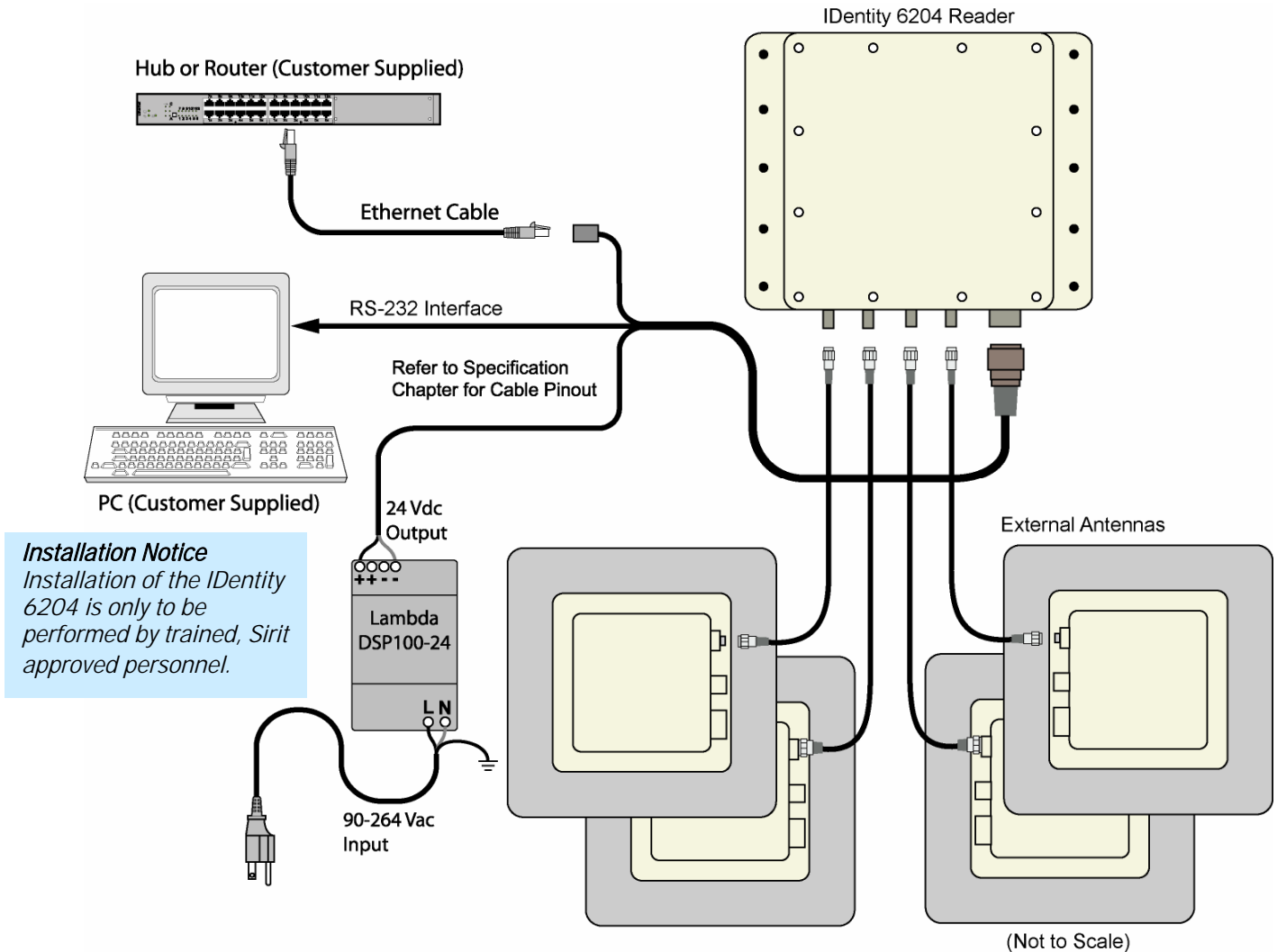
- 1 Prepare the mounting surface to accept the 10 mounting bolts. The hole pattern should match that shown in Figure 3 and the mounting surface must be able to support 11 lbs (5 kg).
- 2 Mount the reader.
- 3 Locate the Interface Cable.
- 4 Connect the cable to the reader's bulk head connector and twist to lock in place.
- 5 Connect the antenna cables (see Figure 4).
- 6 Adjust the angle of the antennas and tighten the hardware.



**WARNING:** *FCC Radiation Exposure Statement. The antennas used for this transmitter must be installed to provide a separation distance of at least 1 meter from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.*

## 2.2. Electrical Installation

A general installation diagram is shown in the following figure. Refer to Chapter 7 – *Specifications* for specific information.



**Figure 4** IDentity 6204 Electrical Connections



**Caution:** The IDentity 6204 is designed to meet the regulatory requirements in those jurisdictions in which it is offered. Changes or modifications not expressly approved by Sirit Technologies for compliance could void the user's authority to operate the equipment.



**ATTENTION** IDentity 6204 antenna ports may be susceptible to damage from static discharge or other high voltage. Use proper Electrostatic Discharge (ESD) precautions to avoid static discharge when handling or making connections to the IDentity 6204 reader antenna or communication ports. Equipment failure can result if the antenna or communication ports are subjected to ESD.

### 2.2.1. Connecting the Serial Port

The IDentity 6204 RS-232 serial port provides communication up to 115200 Baud. This port is accessed through the bulkhead connector on the reader. If you are using the serial port for reader communication, connect a serial cable from the COM port on your PC to the serial port on the reader. See Figure 2 for location of the connector.

Refer to the Chapter 8 – *Specifications* for details on the bulkhead connector.

### 2.2.2. Connecting and Configuring the Ethernet Port

The IDentity 6204 Ethernet port is accessed through the bulkhead connector. If you are communicating with your reader across a Local Area Network (LAN), connect an Ethernet cable from your hub or router to the bulkhead connector.

By default, the reader is configured to use a DHCP server to obtain its IP address and related information. In the event a DHCP server is unavailable, the reader will boot with an IP address in the 169.254.x.x subnet.

In the absence of other readers on the same network, and if no other network traffic is observed which references 169.254.1.1, the reader will select that address; otherwise, it will select a random address on the 169.254.x.x subnet.

IP address settings can be changed using RST. Refer to the *View or Change the Reader's Network Settings* section in Chapter 5.

Refer to the Chapter 8 – *Specifications* for details on the bulkhead connector.

### 2.2.3. Connecting the External Antenna

The IDentity 6204 supports four external Tx/Rx antennas. Connect the antenna to the antenna port located on the bottom of the reader.

Refer to Chapter 7 – Specifications for specific information regarding the external antenna and antenna cable.



**Caution:** *The IDentity 6204 is equipped with four external RF ports. If activated, these RF ports must be properly terminated with a 50 ohm load or a functional UHF antenna before power up. Always power down the reader before removing an antenna or load from an RF port.*



**ATTENTION** *The IDentity 6204 antenna ports may be susceptible to damage from static discharge or other high voltage. Use proper Electrostatic Discharge (ESD) precautions to avoid static discharge when handling or making connections to the IDentity 6204 reader antenna or communication ports. Equipment failure can result if the antenna or communication ports are subjected to ESD.*

### 2.2.4. Connecting Digital Inputs/Outputs

The IDentity 6204 is equipped with a general purpose digital input/output (I/O) port that provides four optically isolated 5-24 VDC input signals and four open-collector output signals. The digital inputs can be used as general purpose inputs or to trigger the reader for tag reading. These inputs can be configured to provide an external read trigger from proximity sensors, photo switches, or other devices.

The digital outputs can be used as general purpose outputs, to indicate tag reading activity, or to indicate the reader is transmitting (RF On). The outputs can also be configured to trigger conveyor gates or other access control and sorting devices. For detailed information on configuring the digital inputs and outputs refer to Chapter 7.

### 2.2.5. Connecting the Power

The IDentity 6204 operates on 24 Vdc provided through the bulkhead connector on the rear of the reader. Connect the power supply to the reader and connect the power supply to your 100–240 Vac, 50-60 Hz power source. Allow 30 seconds for the reader to initialize.

Refer to the Chapter 8 – *Specifications* for details on the bulkhead connector.

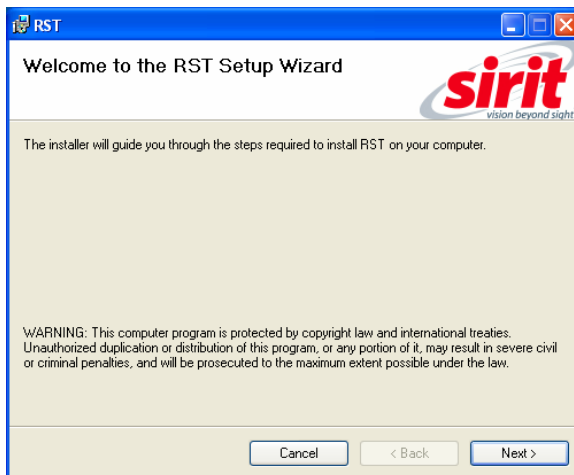
## 3 Reader Startup Tool (RST) Software Installation

### 3.1. Installing RST Software

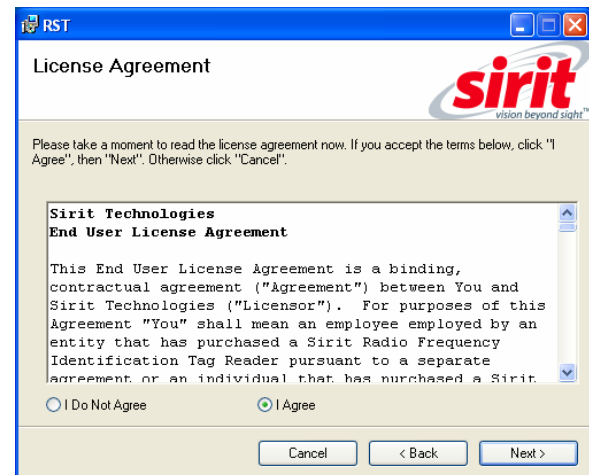
The IDentity 6204 is delivered with a Microsoft Windows application called Reader Startup Tool (RST). You can use this application to initially configure your reader as well as read and display tag data.

#### Install RST

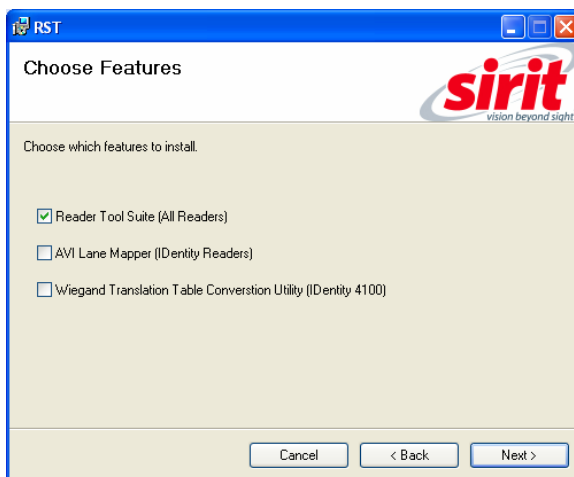
- 1 To install RST, load your product CD and double-click the **RSTInstaller.msi** file:



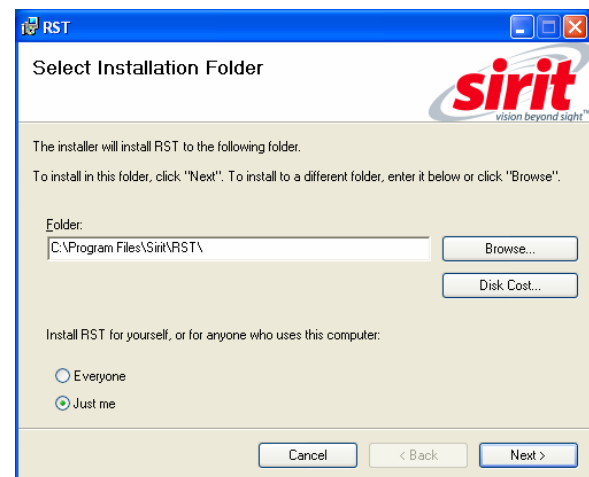
- 2 Press **Next>**



- 3 Read the License Agreement. Select **I Agree** and press **Next>**

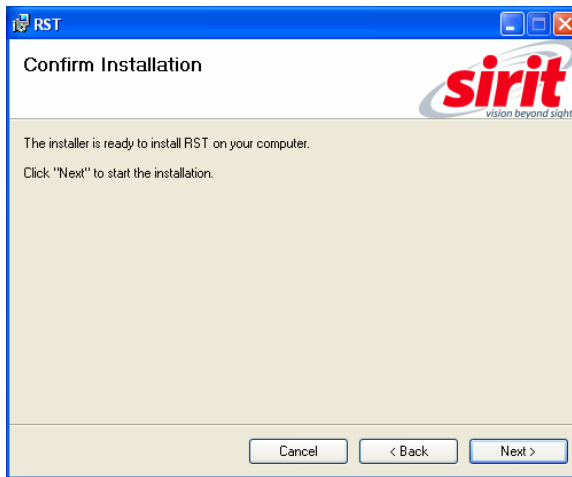


- 4 Select Reader Tool Suite. Press **Next>**.

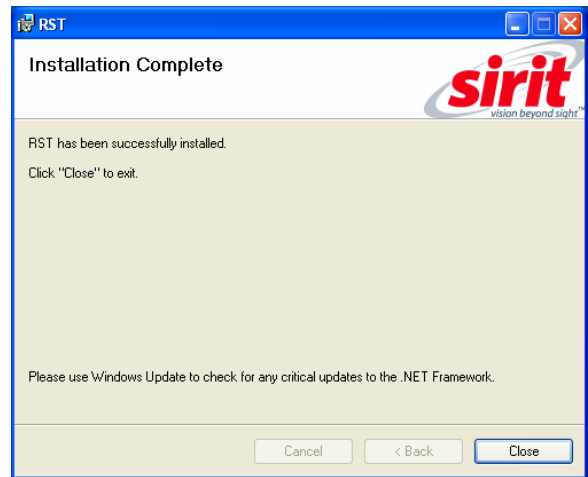


- 5 Verify the path and folder where RST will be installed. Press **Next>**.





5 Press **Next>**.



6 After the installation completes, press **Close**.

## 3.2. Windows 7 Setup

If you have a Windows 7 operating system, your firewall may block UDP traffic and consequently RST may not discover your readers. Perform the following to configure your system:

### For Microsoft Firewall

- 1 Log into your computer as Administrator.
- 2 Navigate to the Control Panel and select **Control Panel → System and Security**.
- 3 Select **Allow a program through Windows firewall**.
- 4 Scroll down the list and locate **Startup Tool**, check it, and press **OK**.
- 5 If Startup Tool is not in the list, press **Allow another program**.
- 6 Locate **Startup Tool**, check it, and press **OK**.
- 7 Restart RST and it should discover readers.

### For Third-Party Firewalls

- 1 Log into your computer as Administrator.
- 2 Set your firewall to allow RST to receive UDP traffic on port 50000 and 50001.

### 3.3. Reader Startup

To begin using your reader, open the RST application.

#### Open RST

- 1 From your Windows desktop, select:

**Start→Programs→Sirix→Reader Startup Tool (RST)**

The screenshot shows the Reader Startup Tool (RST) application window. The window title is "Reader Startup Tool (RST)". The menu bar includes "File", "Discovery", "Tools", and "Advanced Tools". The toolbar contains "Refresh", "Setup Wizard", "Network Settings", "Test", "Configure", and "Diagnose". The main area displays a table with the following columns: Mac Address, IP Address, Host Name, Serial Number, Version, Model, Method (IPv4/IPv6), Location, Zone, Subnet, and Gateway. The table contains 17 rows of device information. At the bottom of the window, it shows "RST Version: 4.1.19265.21635" and "Discovery Listen Address: 239.192.1.101".

Mac Address	IP Address	Host Name	Serial Number	Version	Model	Method (IPv4/IPv6)	Location	Zone	Subnet	Gateway
00:17:9E:00:01:31	10.1.1.86	N1S12SR0-N1	0A416500BC4368AA	3.trunk.192	4100	dhcp/disabled	unknown	unknown	255.255.255.0	10.1.1.1 none
00:17:9E:00:01:8E	10.1.1.76 fe80::217:9eff:fe00:1be/64	ID62040001BE	96FE8402008C9F12	1.0.19289	6204	dhcp/radv_only	unknown	unknown	255.255.255.0	10.1.1.1 none
00:17:9E:00:22:0F	10.1.1.60 fe80::217:9eff:fe00:220f/64	00179E00220F	04229300AF439338	3.trunk.192	5204	dhcp/radv_only	unknown	unknown	255.255.255.0	10.1.1.1 none
00:17:9E:00:2E:E7	10.1.1.64	00179E004714	96FC2408036290DC	3.trunk.spn	5204	dhcp/disabled	unknown	unknown	255.255.255.0	10.1.1.1 none
00:17:9E:BC:14:2C	10.1.1.55 fe80::217:9eff:feb3:142c/64	EP4-C5.fsgn.ne	96FC8402038CB6CF	1.0.19281	6204	dhcp/radv_only	unknown	unknown	255.255.255.0	10.1.1.1 none
00:23:68:C2:CB:F5	10.1.1.53 fe80::223:68ff:feb2:cbf5/64	EP4-10.fsgn.ne	96078402038C09F7	1.0.19289	6204	dhcp/radv_only	unknown	unknown	255.255.255.0	10.1.1.1 none
00:23:68:C3:EB:6E	10.1.1.79 fe80::223:68ff:feb3:eb6e/64	IN610C3EB6E	96F68402008C0908	1.0.17999	610	dhcp/radv_only	unknown	unknown	255.255.255.0	10.1.1.1 none
00:23:68:C3:ED:2F	10.1.1.80 fe80::223:68ff:feb3:ed2f/64	ID6204C3ED2F	96F68402038C09F7	1.0.19281	6204	dhcp/radv_only	unknown	unknown	255.255.255.0	10.1.1.1 none
00:23:68:C3:FC:11	10.1.1.78 fe80::223:68ff:feb3:fc11/64	IN610C3FC11	96028402008C9F02	1.0.19289	6204	dhcp/radv_only	unknown	unknown	255.255.255.0	10.1.1.1 none
00:23:68:C3:FC:52	10.1.1.73 fe80::223:68ff:feb3:fc52/64	IN610C3FC52	96FD8402008C0C2F	1.0.19289	6204	dhcp/radv_only	unknown	unknown	255.255.255.0	10.1.1.1 none
00:23:68:C3:FC:5D	10.1.1.77 fe80::223:68ff:feb3:fc5d/64	IN610C3FC5D	96038402008C9F36	1.0.19278	6204	dhcp/radv_only	unknown	unknown	255.255.255.0	10.1.1.1 none
00:23:68:C3:FC:E1	10.1.1.62 fe80::223:68ff:feb3:fce1/64	EP4-J19.fsgn.nv	96FF8402008C9F2E	1.0.19289	6204	dhcp/radv_only	unknown	unknown	255.255.255.0	10.1.1.1 none
00:23:68:C4:44:90	10.1.1.71 fe80::223:68ff:feb4:4490/64	IN6204C44490	96038402008C9F0A	1.0.19227	6204	dhcp/radv_only	unknown	unknown	255.255.255.0	10.1.1.1 none
40:83:DE:11:95:91	10.1.1.57	EP3-1.fsgn.net	96FCC4000308F6EC	1.0.19289	610	dhcp/disabled	unknown	unknown	255.255.255.0	10.1.1.1 none

- 2 If this is the first time starting the RST application, you may receive a Windows Security Alert. This warning indicates that the firewall is blocking the RST application.
- 3 If the warning window is hidden under the RST windows, collapse the RST window.

**NOTE:**

Earlier versions of Microsoft Windows™ may not provide the Security Alert popup. IF RST does not discover your reader, check your Windows Firewall/Security settings.



- 4 Press Unblock.
- 5 Press **Refresh** on the RST
- 6 The RST main page will display any readers currently connected to the network.


### 3.4. Initial Reader Setup

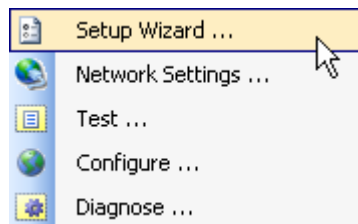
To configure a specific reader, perform the following:

#### Reader Setup

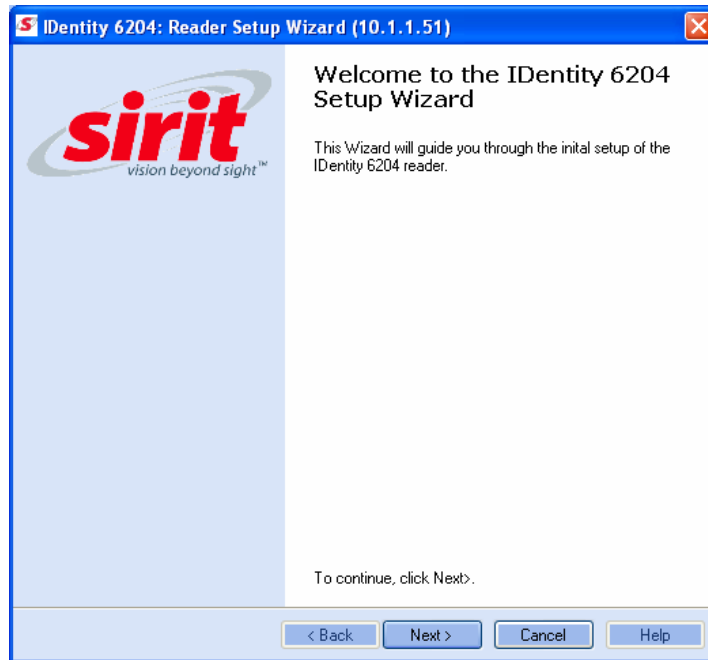
- 1 Select the reader on the main RST page by clicking the button to the left of the reader Mac address.

	Mac Address ▲	IP Address	Host Name	Serial Number
	00:17:9E:00:01:47	10.1.1.64	00179E000147	0B067200FC439853
▶	00:17:9E:00:01:48	10.1.1.65	00179E000148	0F666900CD43F3B6
	00:17:9E:00:2D:F7	10.1.1.59	00179E002DF7	0A469501BE448D92

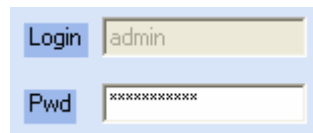
- 2 Press the  Setup Wizard button on the RST tool bar or select **Setup Wizard** from the **Tools** pull-down menu.



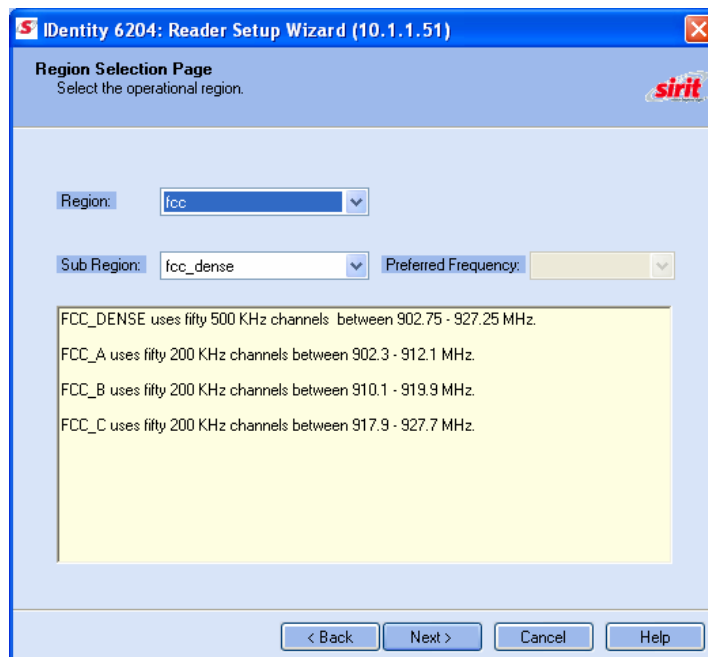
- 3 The IDentity 6204 Reader Setup Wizard (RSW) is displayed.



- 4 Press **Next>** and enter the Login (**admin**) and Password. If this is the first time configuring your reader, enter: **readeradmin**.



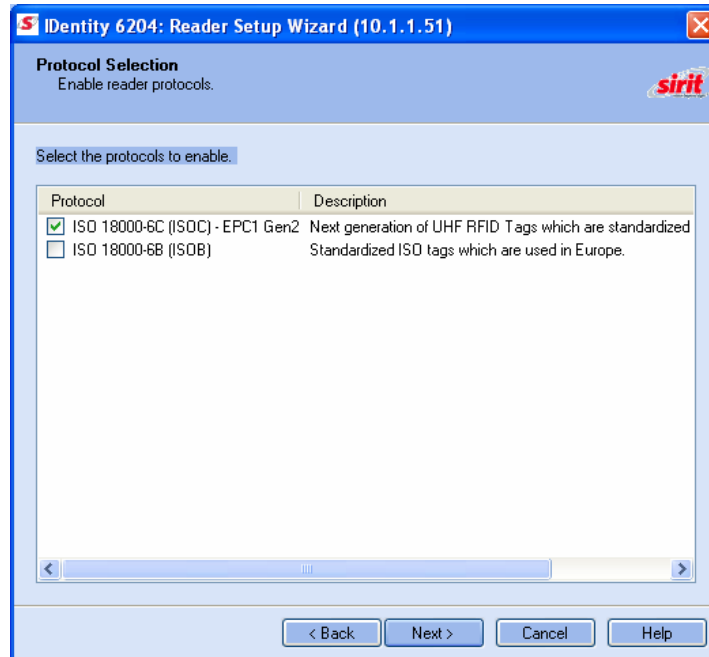
- 5 After entering your Login and Password, press **Next>**



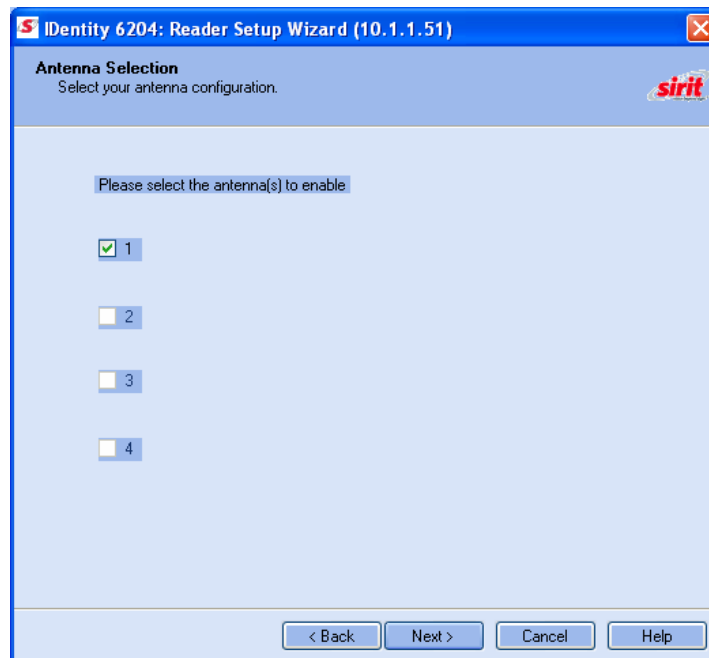
- 6 Select the Region and Sub Region and press **Next>**.

### Custom Setup

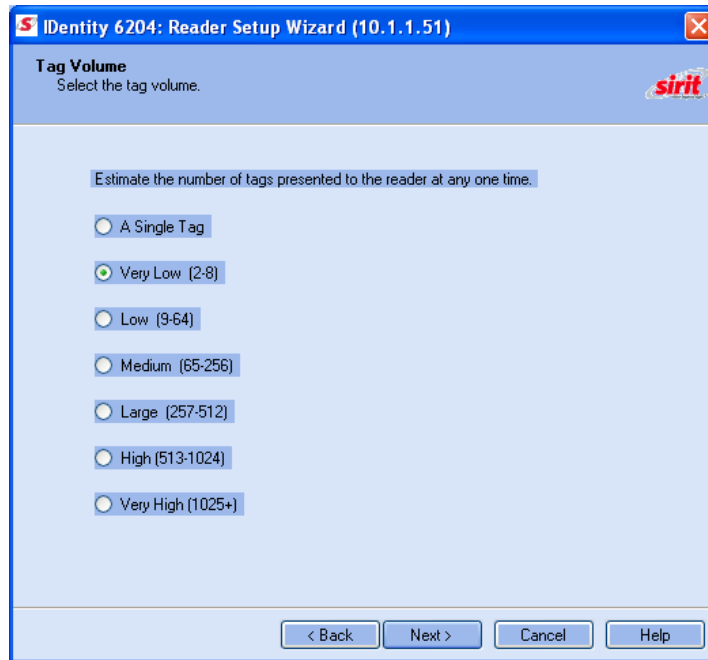
*If your installation type differs from one of the choices shown in the Setup Wizard, you can always customize your setup later using the embedded web interface capability. See the Advanced Setup chapter in this guide for more information.*



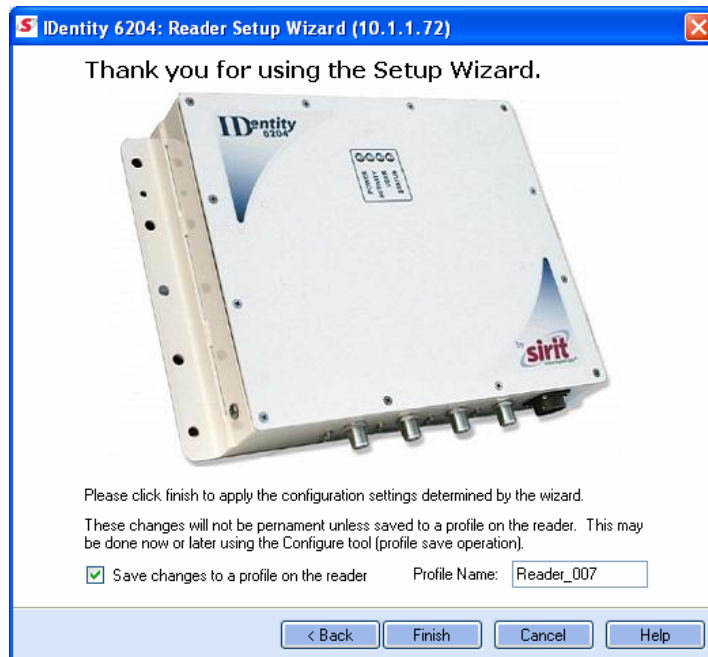
- 7 Select the protocol of the tags you will be reading and press **Next>**.



- 8 Select the antennas you will be installing and press **Next>**.



- 9 Estimate the number of tags that will be presented to the reader at any one time and press **Next>**.



**Saving Reader Setup**  
 Reader setup information should be saved as a profile. In the event that you need to reboot or power down a reader, the reader setup can be quickly reloaded by loading the profile. If you don't save the reader setup, you can lose the information if the reader is rebooted.

- 10 It is highly recommended that you save the reader setup as a profile. Select **Save changes to a profile...**, enter a **Profile Name**, and press **Finish** to complete the initial reader setup.

## 4 Reader Operation

### 4.1. Basic Operation with RST


The IDentity 6204 can be operated either from the RST application or by logging directly into the reader's embedded Reader Configuration Tool (RCT). To operate the reader from RST, perform the following:

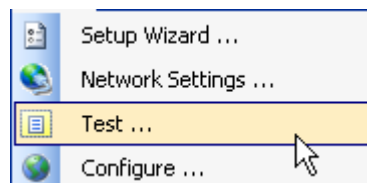
#### Open RST

- 1 From your Windows desktop, select:

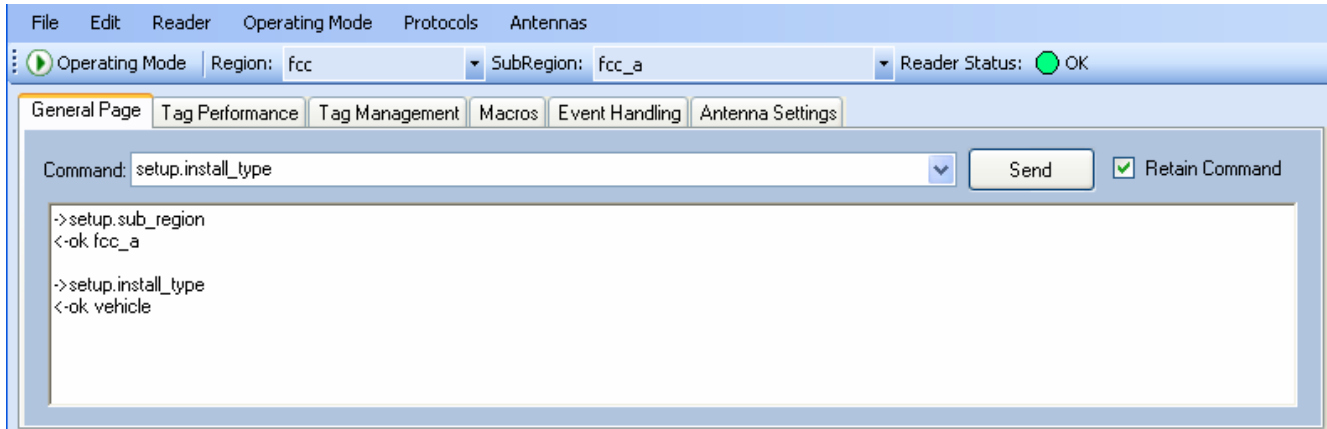
**Start**→**Programs**→**Sirit**→**Reader Startup Tool (RST)**

Mac Address	IP Address	Host Name	Serial Number	Version	Model	Method (IPv4/IPv6)	Location	Zone	Subnet	Gateway
00:17:9E:00:01:31	10.1.1.86	N1S12SR0-N1	0A416500BC4368AA	3.trunk.192	4100	dhcp/disabled	unknown	unknown	255.255.255.0	10.1.1.1 none
00:17:9E:00:01:BE	10.1.1.76 fe80::217:9eff:fe00:1be/64	ID62040001BE	96FE8402008C9F12	1.0.19289	6204	dhcp/radv_only	unknown	unknown	255.255.255.0	10.1.1.1 none
00:17:9E:00:22:0F	10.1.1.60 fe80::217:9eff:fe00:220f/64	00179E00220F	04229300AF439338	3.trunk.192	5204	dhcp/radv_only	unknown	unknown	255.255.255.0	10.1.1.1 none
00:17:9E:00:2E:E7	10.1.1.64	00179E004714	96FC2408036290DC	3.trunk.spn	5204	dhcp/disabled	unknown	unknown	255.255.255.0	10.1.1.1 none
00:17:9E:BC:14:2C	10.1.1.55 fe80::217:9eff:feb3:142c/64	EP4-C5.fsgn.ne	96FC8402038CB6CF	1.0.19281	6204	dhcp/radv_only	unknown	unknown	255.255.255.0	10.1.1.1 none
00:23:68:C2:CB:F5	10.1.1.53 fe80::223:68ff:fec2:cbf5/64	EP4-10.fsgn.ne	96078402038C09F7	1.0.19289	6204	dhcp/radv_only	unknown	unknown	255.255.255.0	10.1.1.1 none
00:23:68:C3:EB:6E	10.1.1.79 fe80::223:68ff:fec3:eb6e/64	IN610C3EB6E	96F68402008C090B	1.0.17999	610	dhcp/radv_only	unknown	unknown	255.255.255.0	10.1.1.1 none
00:23:68:C3:ED:2F	10.1.1.80 fe80::223:68ff:fec3:ed2f/64	ID6204C3ED2F	96F68402038C09F7	1.0.19281	6204	dhcp/radv_only	unknown	unknown	255.255.255.0	10.1.1.1 none
00:23:68:C3:FC:11	10.1.1.78 fe80::223:68ff:fec3:fc11/64	IN610C3FC11	96028402008C9F02	1.0.19289	6204	dhcp/radv_only	unknown	unknown	255.255.255.0	10.1.1.1 none
00:23:68:C3:FC:52	10.1.1.73 fe80::223:68ff:fec3:fc52/64	IN610C3FC52	96FD8402008C0C2F	1.0.19289	6204	dhcp/radv_only	unknown	unknown	255.255.255.0	10.1.1.1 none

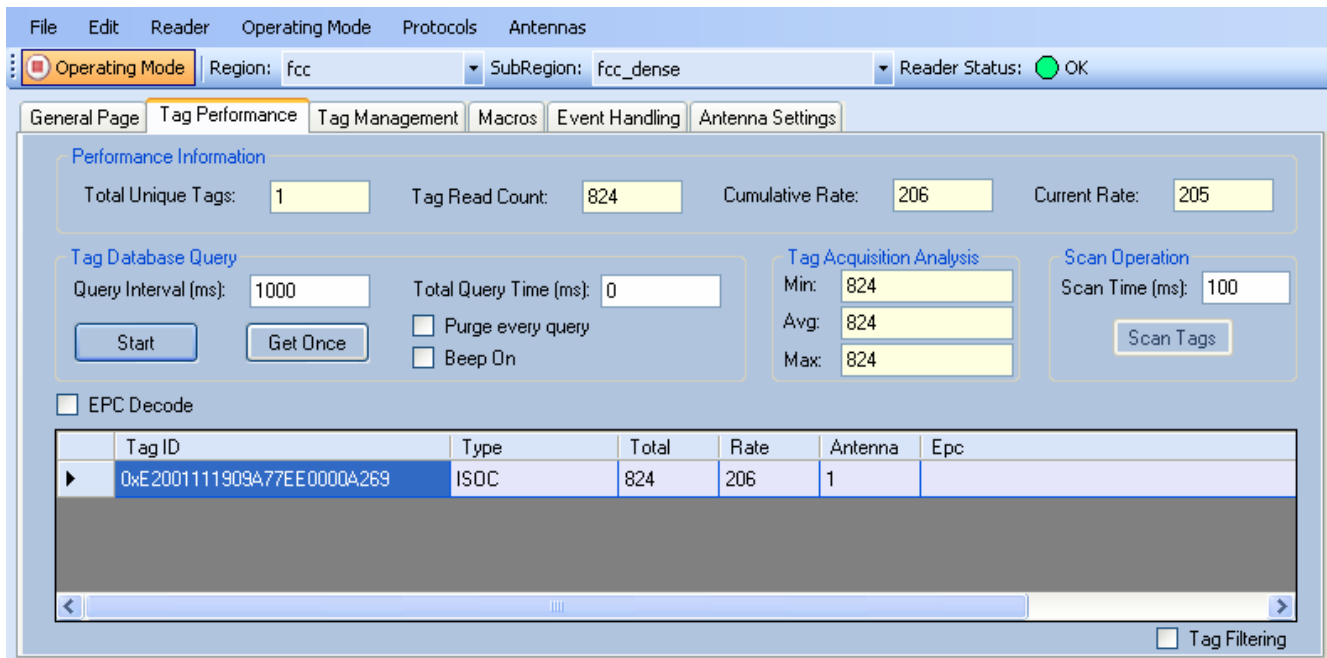
- 2 Select a reader and press  **Test** on the RST tool bar or select **Test** from the **Tools** pull-down menu.



3 The Reader Test Tool (RTT) is displayed.




- 4 Login to the reader. From the pull-down menu select **Reader**→**Login**...
- 5 For administrator login, select **admin**. The initial password (**Pwd**) is **readeradmin**. See Advanced Setup section to change the password.
- 6 Verify the Operating Mode is set to **Active**. From the pull-down menu select **Operating Mode**→**Active**.
- 7 Select the **Tag Performance** tab and press **Start**.
- 8 Place tags in front of antenna and verify tags are read and displayed.

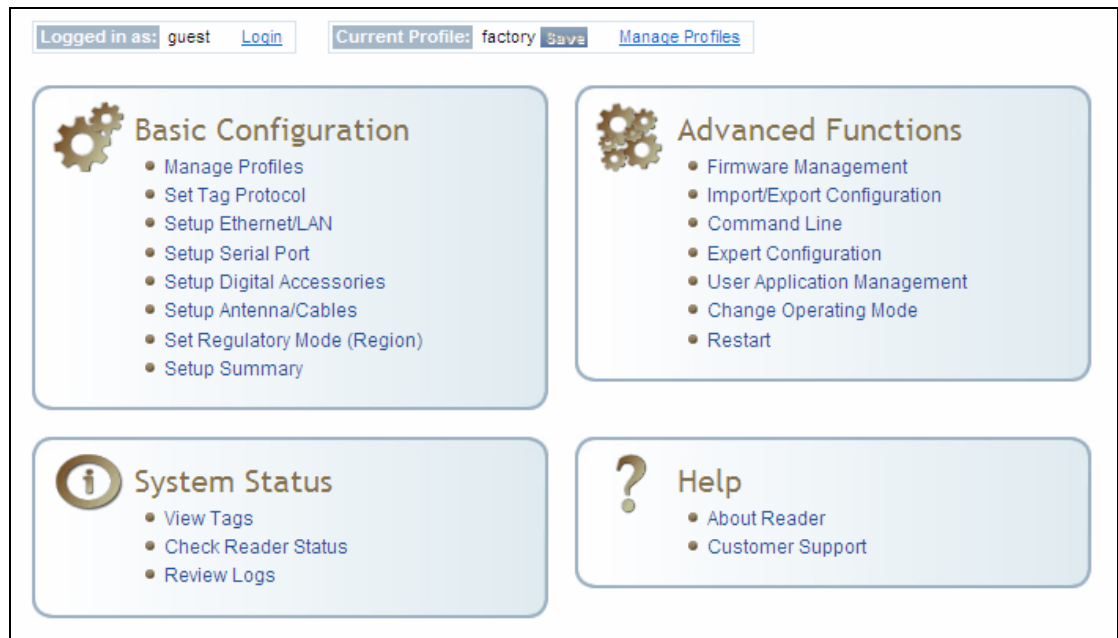




## 4.2. Deployed Reader Operation with RCT

Once your readers are deployed, you can access them directly using the embedded Reader Configuration Tool (RCT). To access a particular reader, perform the following:

- 1 Enter the reader’s IP address into your web browser, press the  button on the RST tool bar or select **Configure** from the **Tools** pull-down menu.
- 2 The reader’s RCT interface is displayed.



- 3 Log into the reader. Press **Login** for the login screen.

Name	Value	?
Login	<input type="text" value="admin"/>	?
Password	<input type="password" value="*****"/>	?

- 4 The default login is **guest**. If you need administrator privileges, login as **admin** and enter **readeradmin** as the password.
- 5 Press **Submit**.
- 6 Select **Basic Configuration** → **Setup Antenna/Cables** to configure the antennas, gain, and power settings.

- 7 Select **Advanced Functions** → **Change Operating Mode** to verify the reader is in the proper mode.
- 8 Select **Basic Configuration** → **Set Tag Protocol** to verify the reader is configured for the proper tag protocol.
- 9 Press **System Status** → **View Tags** to view tag data.

Tag ID	Protocol	Antenna	Repeat Counts	First Read Time	Last Read Time
0x0304020800000000000016335	ISOC	4	25	2009-06-02T21:08:54.865	2009-06-02T21:08:57.178
0x0304020800000000000016336	ISOC	3	12	2009-06-02T21:08:54.954	2009-06-02T21:08:57.045
0x0304020800000000000016337	ISOC	4	25	2009-06-02T21:08:54.876	2009-06-02T21:08:57.176
0x0304020800000000000016338	ISOC	4	25	2009-06-02T21:08:54.868	2009-06-02T21:08:57.178
0x0304020800000000000016354	ISOC	4	25	2009-06-02T21:08:54.900	2009-06-02T21:08:57.176
0x0304020800000000000016355	ISOC	4	13	2009-06-02T21:08:54.848	2009-06-02T21:08:57.175

Polling Period (seconds): 
Start
Stop
Get Once
Purge

- 10 If you need to configure additional changes to your reader, refer to *Chapter 7 – Reader Configuration Tool* for information on using RCT to adjust configuration variables and parameters.

## 5 Reader Startup Tool (RST)

The Reader Startup Tool (RST) provides an easy-to-use interface for the Identity 6204 configuration and operation functions. This application resides on your Windows based computer and allows you to perform the following:

- View all readers on the network
- Launch the **Reader Setup Wizard** to configure a reader
- View and change a reader's network settings
- Add a new reader to the network
- Launch **Reader Test Tool** to perform basic reader/tag operations
- Launch **Reader Diagnostic Tool** to view statistics, alarms, and reports

### 5.1. View Readers on the Network

When RST starts up, all readers currently connected to the network and powered up are displayed.

The screenshot shows the Reader Startup Tool (RST) application window. The title bar reads "Reader Startup Tool (RST)". The menu bar includes "File", "Discovery", "Tools", and "Advanced Tools". The toolbar contains "Refresh", "Setup Wizard", "Network Settings", "Test", "Configure", and "Diagnose". The main area displays a table with the following columns: Mac Address, IP Address, Host Name, Serial Number, Version, Model, Method (IPv4/IPv6), Location, Zone, Subnet, and Gateway. The table contains 17 rows of reader data. The status bar at the bottom shows "RST Version: 4.1.19265.21635" and "Discovery Listen Address: 239.192.1.101".


Mac Address	IP Address	Host Name	Serial Number	Version	Model	Method (IPv4/IPv6)	Location	Zone	Subnet	Gateway
00:17:9E:00:01:31	10.1.1.86	N1S125R0-N1	0A416500BC4368AA	3.trunk.192	4100	dhcp/disabled	unknown	unknown	255.255.255.0	10.1.1.1 none
00:17:9E:00:01:BE	10.1.1.76 fe80::217:9eff:fe00:1be/64	ID62040001BE	96FE8402008C9F12	1.0.19289	6204	dhcp/radv_only	unknown	unknown	255.255.255.0	10.1.1.1 none
00:17:9E:00:22:0F	10.1.1.60 fe80::217:9eff:fe00:220f/64	00179E00220F	04229300AF439338	3.trunk.192	5204	dhcp/radv_only	unknown	unknown	255.255.255.0	10.1.1.1 none
00:17:9E:00:2E:E7	10.1.1.64	00179E004714	96FC2408036290DC	3.trunk.spn	5204	dhcp/disabled	unknown	unknown	255.255.255.0	10.1.1.1 none
00:17:9E:BC:14:2C	10.1.1.55 fe80::217:9eff:febc:142c/64	EP4-C5.fsgn.net	96FC8402038CB6CF	1.0.19281	6204	dhcp/radv_only	unknown	unknown	255.255.255.0	10.1.1.1 none
00:23:68:C2:CB:F5	10.1.1.53 fe80::223:68ff:fec2:cbf5/64	EP4-10.fsgn.net	96078402038C09F7	1.0.19289	6204	dhcp/radv_only	unknown	unknown	255.255.255.0	10.1.1.1 none
00:23:68:C3:EB:6E	10.1.1.79 fe80::223:68ff:fec3:eb6e/64	IN610C3EB6E	96F68402008C090B	1.0.17999	610	dhcp/radv_only	unknown	unknown	255.255.255.0	10.1.1.1 none
00:23:68:C3:ED:2F	10.1.1.80 fe80::223:68ff:fec3:ed2f/64	ID6204C3ED2F	96F68402038C09F7	1.0.19281	6204	dhcp/radv_only	unknown	unknown	255.255.255.0	10.1.1.1 none
00:23:68:C3:FC:11	10.1.1.78 fe80::223:68ff:fec3:fc11/64	IN610C3FC11	96028402008C9F02	1.0.19289	6204	dhcp/radv_only	unknown	unknown	255.255.255.0	10.1.1.1 none
00:23:68:C3:FC:52	10.1.1.73 fe80::223:68ff:fec3:fc52/64	IN610C3FC52	96FD8402008C0C2F	1.0.19289	6204	dhcp/radv_only	unknown	unknown	255.255.255.0	10.1.1.1 none
00:23:68:C3:FC:5D	10.1.1.77 fe80::223:68ff:fec3:fc5d/64	IN610C3FC5D	96038402008C9F36	1.0.19278	6204	dhcp/radv_only	unknown	unknown	255.255.255.0	10.1.1.1 none
00:23:68:C3:FC:E1	10.1.1.62 fe80::223:68ff:fec3:fce1/64	EP4-J19.fsgn.net	96FF8402008C9F2E	1.0.19289	6204	dhcp/radv_only	unknown	unknown	255.255.255.0	10.1.1.1 none
00:23:68:C4:44:90	10.1.1.71 fe80::223:68ff:fec4:4490/64	IN6204C44490	96038402008C9F0A	1.0.19227	6204	dhcp/radv_only	unknown	unknown	255.255.255.0	10.1.1.1 none
40:83:DE:11:95:91	10.1.1.57	EP3-1.fsgn.net	96FCC4000308F6EC	1.0.19289	610	dhcp/disabled	unknown	unknown	255.255.255.0	10.1.1.1 none

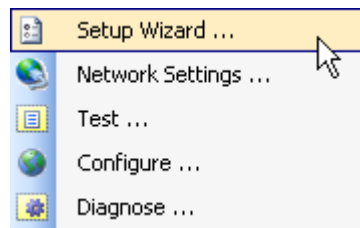
## 5.2. Configure Reader with the Setup Wizard

The Reader Setup Wizard is used to initially configure your reader for operation. With this application, you can select the following:

- Installation type
- Regulatory region and sub-region
- Protocol
- Number of antennas
- Estimated tag volume

To initially configure your reader perform the following:

- 1 Press the  button on the RST tool bar or select **Setup Wizard** from the **Tools** pull-down menu.



- 2 The IDentity 6204 Reader Setup Wizard (RSW) is displayed.



- 3 Refer to Chapter 2 – *Reader Configuration* for detailed instructions on using the Reader Setup Wizard.

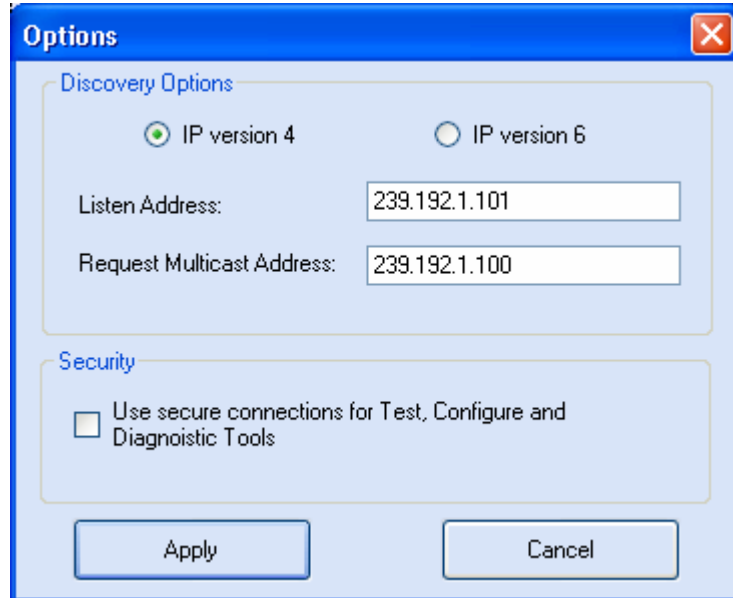
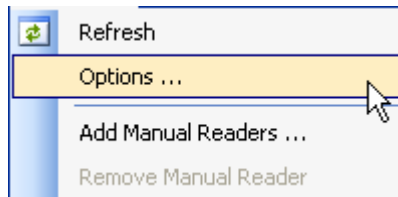
### 5.3. Customize Discovery Options

You can customize the reader discovery options including the Listen Address and Request Multicast Address.

- **Listen Address** – Address that RST uses to listen for UDP discovery packets from the reader. This is customizable on the reader.
- **Request Multicast Address** –Address used by RST to send out the UDP update request packets. This is customizable on the reader.

In addition, you can select if you want a secure connection for the Test, Configure, and Diagnostic Tools. This connection uses the HTTPS protocol and any data transferred between devices is encrypted.

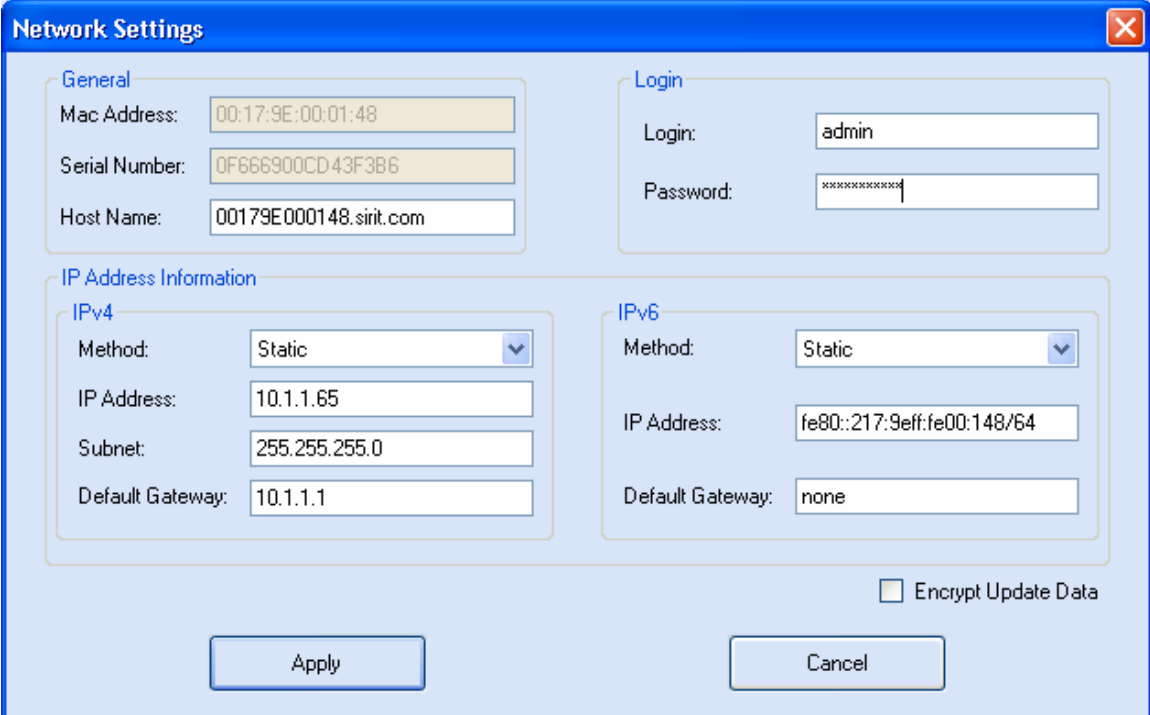
- 1 On the RST tool bar select **Options** from the **Discovery** pull-down menu.



- 2 Select either **IP version 4** or **IP version 6**.
- 3 Enter the **Listen Address** and **Request Multicast Address** as required.
- 4 Select whether you require a secure connection for the Test, Configure, and Diagnostic Tools.
- 5 Press **Apply**.

## 5.4. View or Change the Reader's Network Settings

- 1 From the RST main page, press the  button.



**Network Settings**

**General**

Mac Address: 00:17:9E:00:01:48

Serial Number: 0F666900CD43F3B6

Host Name: 00179E000148.sirit.com

**Login**

Login: admin

Password: xxxxxxxxxxxx

**IP Address Information**

**IPv4**

Method: Static

IP Address: 10.1.1.65

Subnet: 255.255.255.0

Default Gateway: 10.1.1.1

**IPv6**

Method: Static

IP Address: fe80::217:9eff:fe00:148/64

Default Gateway: none


Encrypt Update Data

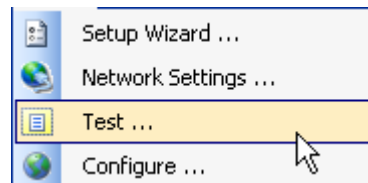
Apply Cancel

- 2 Verify the **IP Address**, **Subnet**, and **Default Gateway** are correct.
- 3 If **Method: DHCP** is selected these fields will be locked.
- 4 If required, change the values.

## 5.5. Reader Test Tool (RTT)

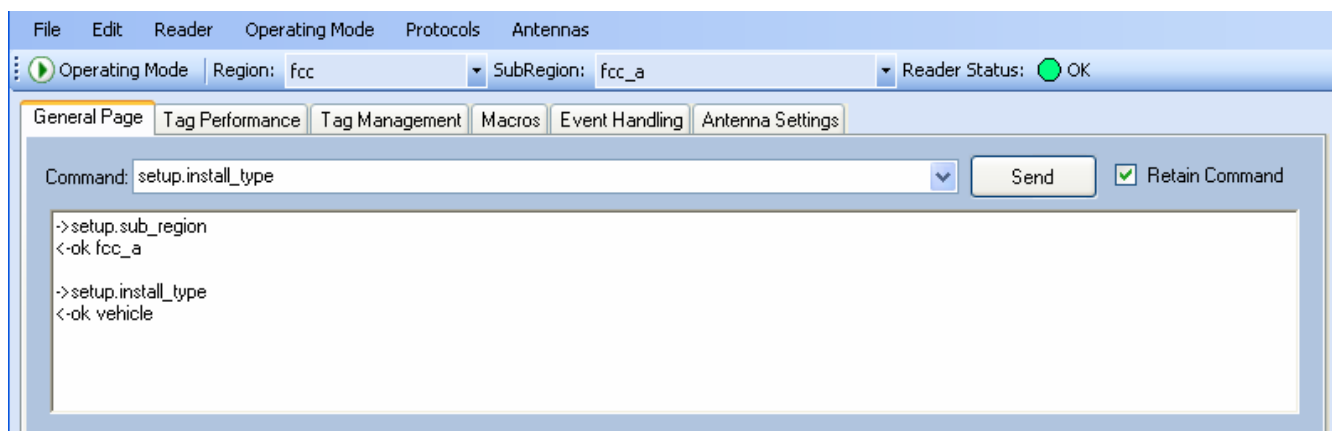
The Reader Test Tool (RTT) is primarily designed for new users to test reader operation and perform a few basic reader functions. With RTT, you can perform the following:

- Read tags
- Issue commands to the reader and view the responses
- Run macros
- Observe reader events
- To access the Reader Test Tool, select a reader and press  **Test** on the RST tool bar or select **Test** from the **Tools** pull-down menu.



### 5.5.1. General Page

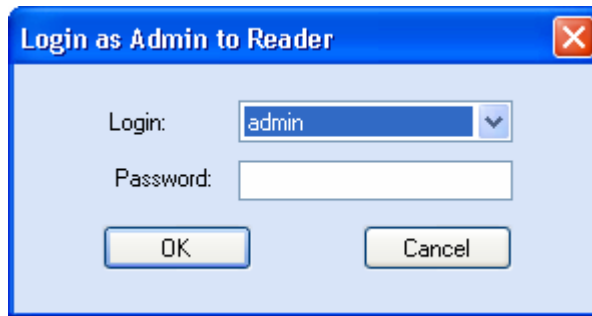
The **General Page** allows you to issue commands to the reader and view any responses. From the pull-down menus, you can also login to the reader, change the operating mode, select another protocol, and select which antennas are active.



## Login to Reader

To login to the reader, perform the following:

- 1 From the pull-down menu, select **Reader**→**Login....**



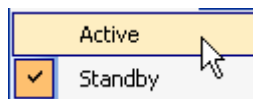
### Default Admin Password

*Sirit recommends changing the default Admin password once installation, configuration, and testing are complete.*

- 2 Select the type of **Login** from the pull down. The default login is **guest**. If you need administrator privileges, login as **admin**.
- 3 Enter your **Password**. Enter **readeradmin** as the password if you logged in as **admin**.
- 4 Press **OK**.

## Select Operating Mode

From the pull-down menu, select **Operating Mode**→<**Active | Standby**>




or, press the Operating Mode select button on the left side of the tool bar.

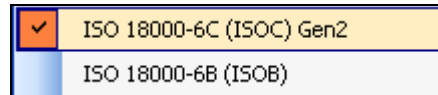


- **Active** – Reader is continuously attempting to singulate tags and automatically reports any singulated tag via an asynchronous event notification on the event channel.
- **Standby** – Reader is not transmitting any RF energy, unless processing a tag related command. The transmitter is enabled at the beginning of the command processing, protocol operations required for the command are performed, and then the RF transmitter is turned off.




### Select Protocol

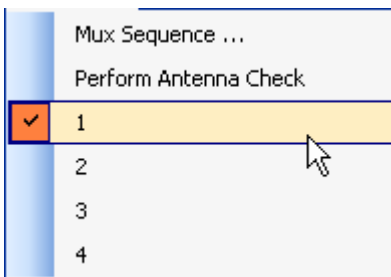
You can activate one or more protocols on the Identity 6204 using RST. From the pull-down menu, select **Protocols**→<protocol>. Active protocols are indicated by .



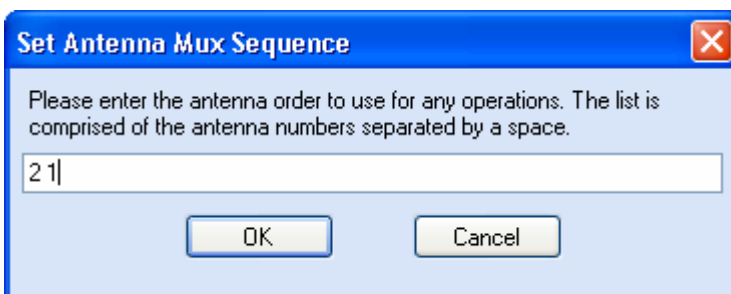
### Antenna Selection

You can select the ports that have antennas connected and which antennas are active. Perform the following:

- 1 From the pull-down menu, select **Antennas**→<n>. Active antennas are indicated by .



- 2 You can also select the order in which antennas are activated. From the pull-down menu, select **Antennas**→**Mux sequence....**

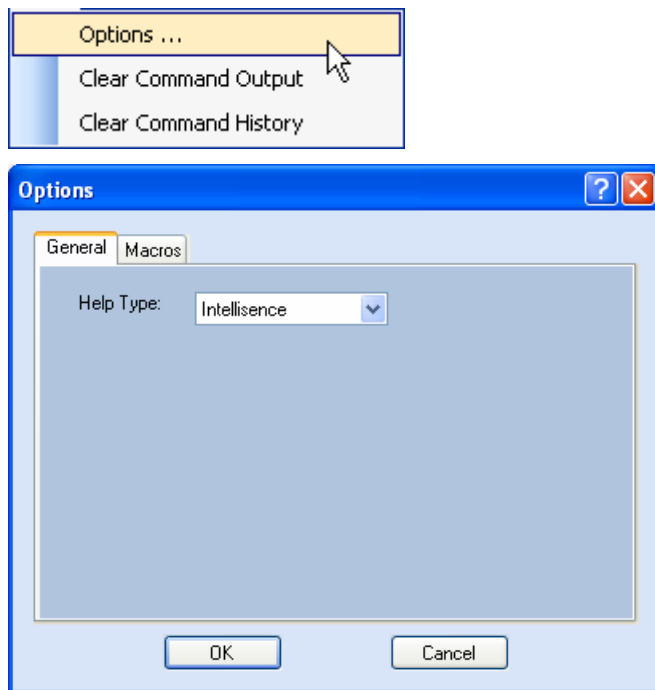


- 3 Enter the antenna numbers in the order to be activated.
- 4 Press **OK**.

### Set Reader Options

You can setup other reader options including help type macro highlighting.

From the pull-down menu, select **Edit**→**Options**.

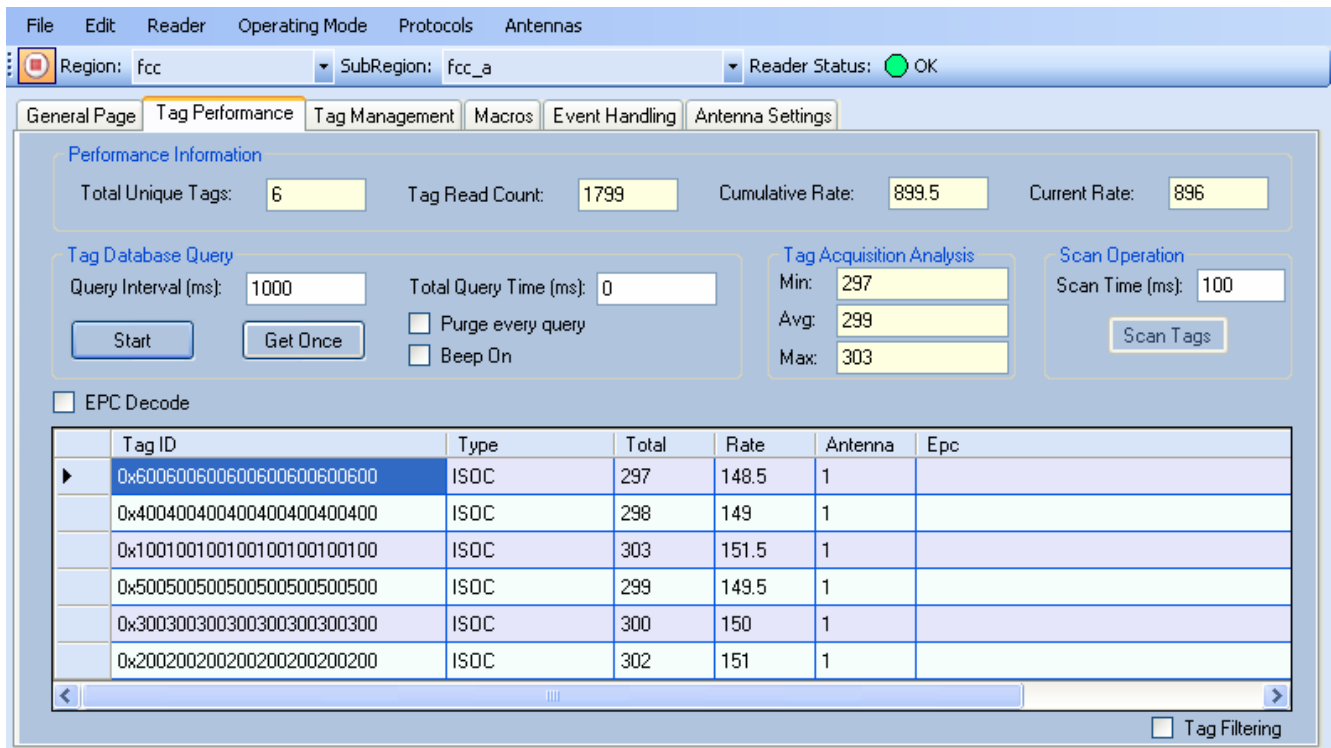


## 5.5.2. Tag Performance Page

The **Tag Performance** page is used to test the reader performance.

To initiate a timed test, enter the length of test (in ms) into the **Total Query Time** field. For example, to verify to number of tags read in a 30-second interval, select **Active** Operating Mode, enter 30000, and press the **Start** button. The test will complete after 30 seconds and the output statistics are updated for the query time.

Output statistics are read-only and include: Total Unique Tags, Tag Read Count, Cumulative Rate, and Current Rate.



Detailed descriptions of the various Tag Performance fields and functions are provided in the following sections.

Tag read controls are provided by the **Tag Database Query** and **Scan Operation** blocks. Use the **Query** controls when the reader is in Active mode. Use the **Scan Operation** controls when in Standby mode.

Tag and reader performance data is provided in the **Performance Information** and **Tag Acquisition Analysis** blocks.

### Performance Information



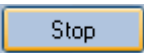

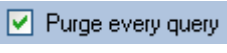
**Total Unique Tags** – Number of unique tags in the tag database.

**Tag Read Count** – Total number of tags read (including repeat reads).

**Cumulative Rate** – Cumulative read rate in tags/second since the **Start** button was pressed.

**Current Rate** – Current read rate in tags/second.

### Tag Database Query Controls

	Click to retrieve the current information from reader's tag database.
	Click to query the tag database every <b>Query Interval (ms)</b> for a total time of <b>Total Query Time (ms)</b> . Do not set the interval less than 500. If Total Query Time is set to 0, query continues indefinitely.
	Click to stop automatic query.
<input checked="" type="checkbox"/> 	Indicates current read rate with audible tone.
<input checked="" type="checkbox"/> 	Check to purge the reader's tag database after each query. Refer to the <i>IDentity 6204 Protocol Reference Guide</i> for more information on the tag database.

### Tag Acquisition Analysis

The **Tag Acquisition Analysis** fields provide the minimum, maximum, and average number of times each tag was read. For example, assume five tags (A, B, C, D, and E) are read 107, 59, 223, 187, and 94 times respectively. The displayed values are as follows:

**Min** = 59

**Avg** = 134

**Max** = 223

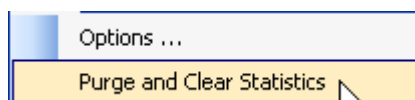
### Scan Operation

**Scan time (ms)** – Enter the duration of reader operation in milliseconds. After this time expires, the tag information is displayed.

 Press this button to activate the reader.

### Purge and Clear Reader Statistics

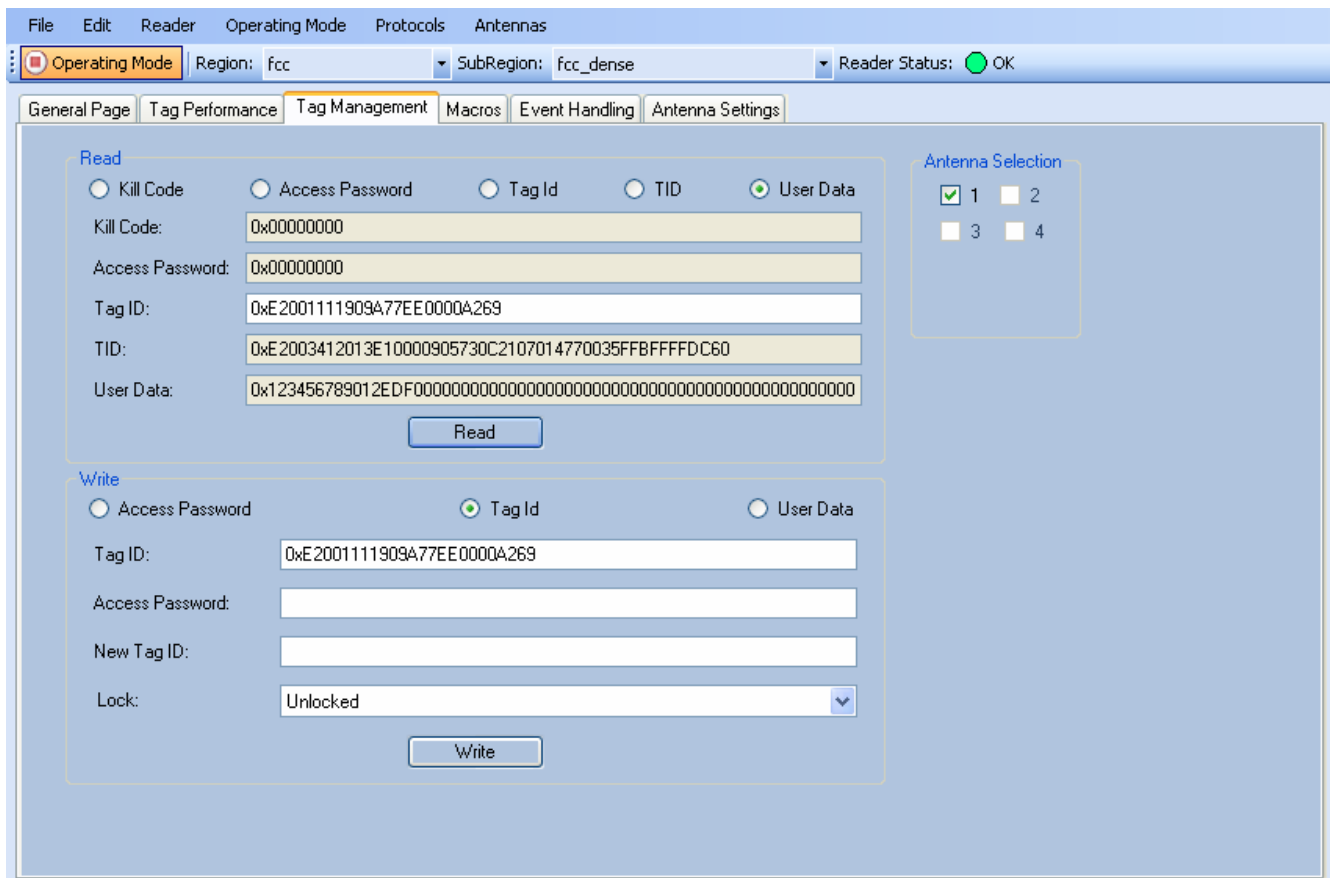
Select the reader and then select **Edit**→**Purge and Clear Statistics**.



### 5.5.3. Tag Management Page

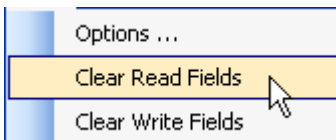
The **Tag Management** page is used for reading individual fields on a single tag as well as writing the access password and locking a tag. The **Read** button will cause the reader to singulate and read a tag in the selected antennas' RF field. Specific fields you can read include:

- Kill Code
- Access Code
- Tag ID
- TID
- User Data



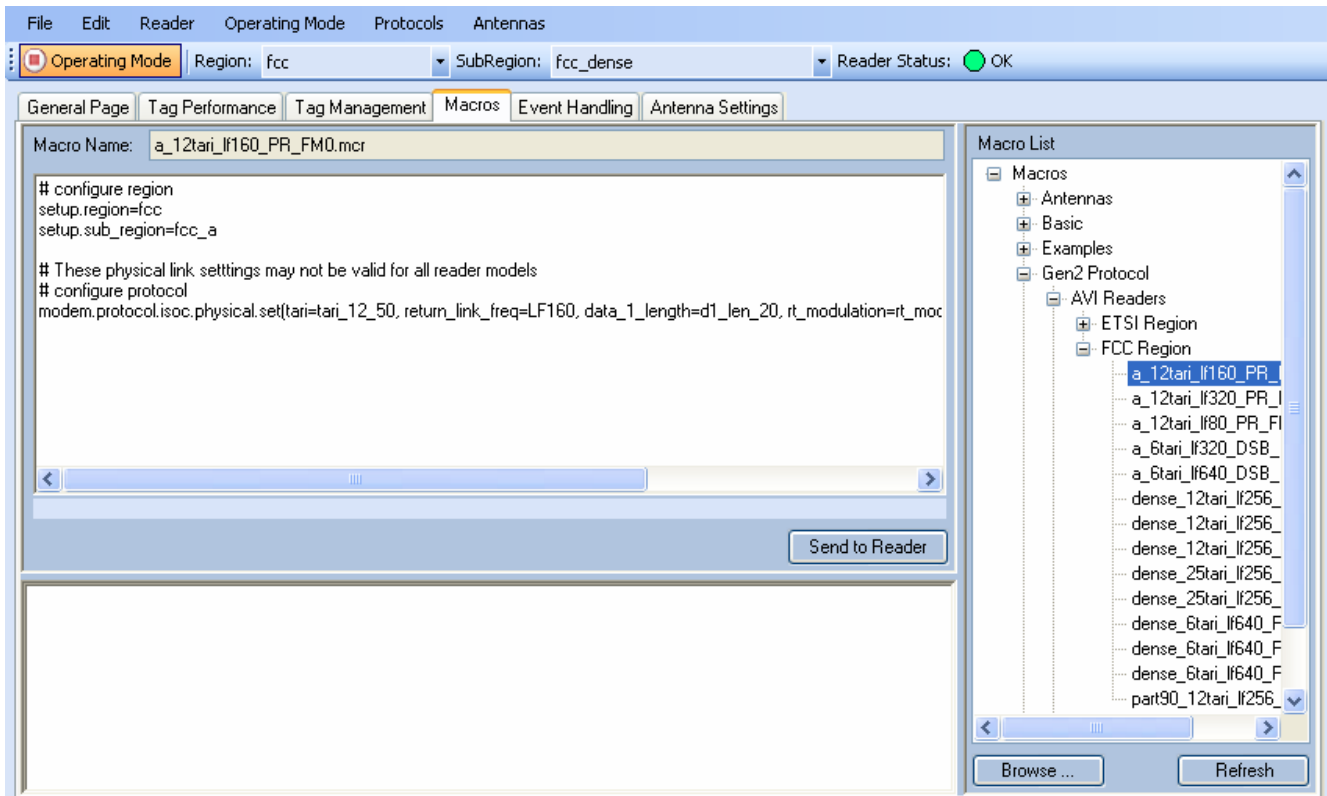
#### Clear Read and Write Fields

To clear the Read or Write fields, select **Edit**→**Clear....**



### 5.5.4. Macros Page

The **Macros** page allows the reader to manage macro files. The macros are provided by Sirit or can be written by the end user. Some of the macros provided are dependent on the operating region of the reader.



A macro (script or command file) is a text file that contains one or more reader commands. These commands are used to configure the reader to a known configuration. The Macros can contain variables. These variables are resolved by a dialog box (**Macro Variables**) that appears when the **Send to Reader** button is selected. The syntax of a variable is:

**[\$variable\_name]**

During execution, the variable is replaced with user entries into the **Macro Variables** dialog box. Macros can be edited with any text editor including Windows Notepad.

### Macro Input sub-window

The **Macro Input** window shows the current script that will be sent to the reader when the **Send to Reader** button is selected. The text in the **Macro Input** window can be edited prior to being sent to the reader.

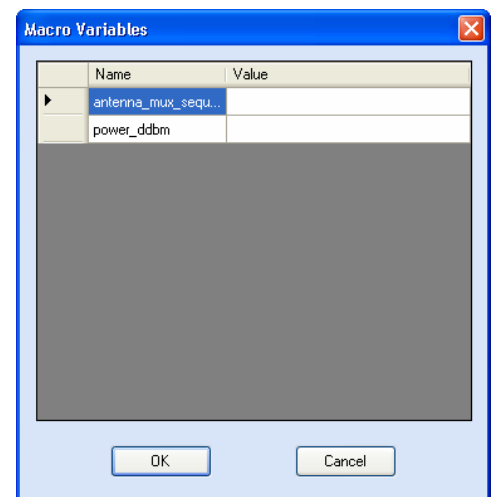
### Macro Output sub-window

The **Macro Output** window is updated after the **Send to Reader** button is selected. Look at this window to verify that each command line in a script executed correctly. Look for the **-->> ok** response from the reader for each command line.

### Macro Variables Dialog box

When a macro is sent to the reader, the values for variables must be resolved via this Windows Dialog box. You can **[tab]** to each value field and enter the desired value.

For example, one macro can be used for two different applications by using variables for antenna selection and transmit power.



### Macro Example

To configure the reader for FCC, Part 90 Dense operation, send the following macro (**part90\_6tari\_lf640\_PR\_M2.mcr**):

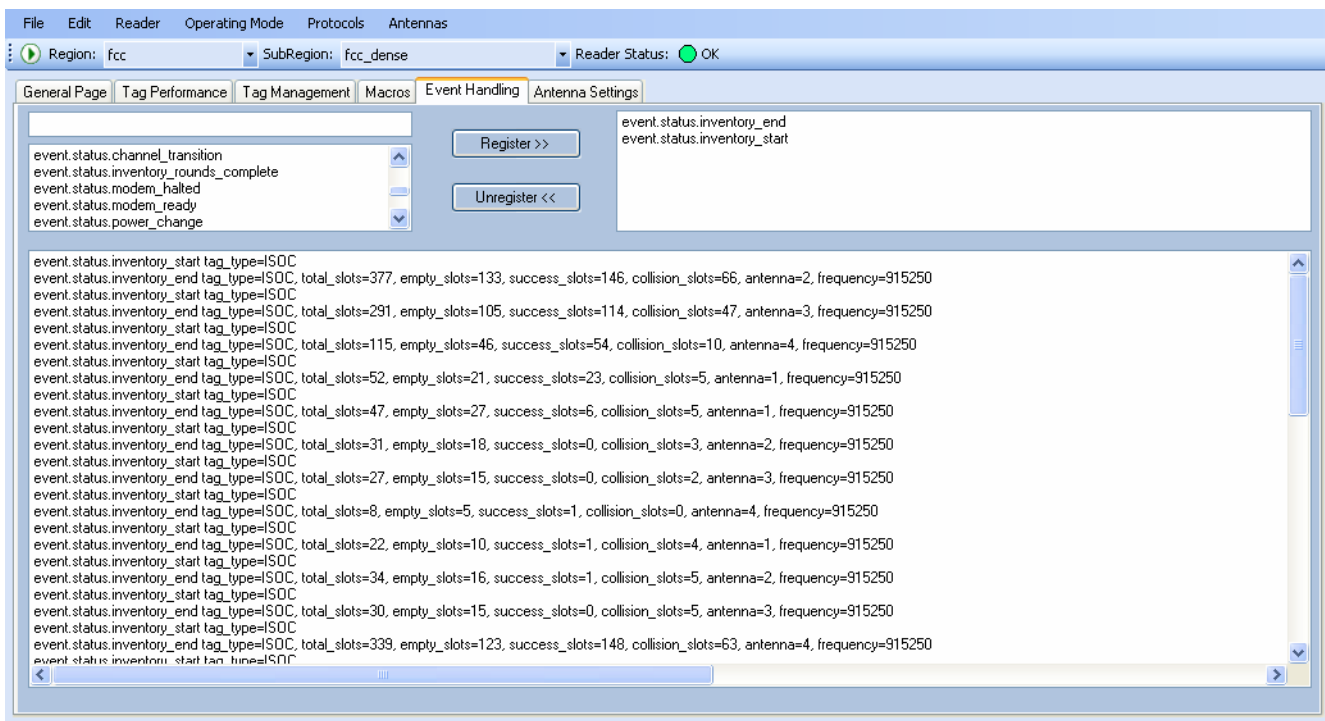
```
# configure region
setup.region=fcc
setup.sub_region=fcc_part90

# set frequency
setup.advanced.preferred_frequencies=915950

# configure protocol
modem.protocol.isoc.control.auto_phy.enable=false
modem.protocol.isoc.physical.set(tari=tari_06_25,
return_link_freq=LF640, data_1_length=d1_len_20,
rt_modulation=rt_mod_pr,
tr_encoding=tr_enc_miller_2,interrogator_mode=dense)
```

### 5.5.5. Event Handling Page

The **Event Handling** page allows you to register for Reader Events. After registration, events are displayed with the newest on the bottom and the most recent event will scroll to the bottom of the window. Individual events or a group of events can be registered. For detailed information on individual events, refer to *Chapter 18 – Events Namespace* of the **IDentity 6204 Protocol Reference Guide**.



#### Registering for an individual event

To register for an individual event, either type the event name or select an event from a pull-down list.

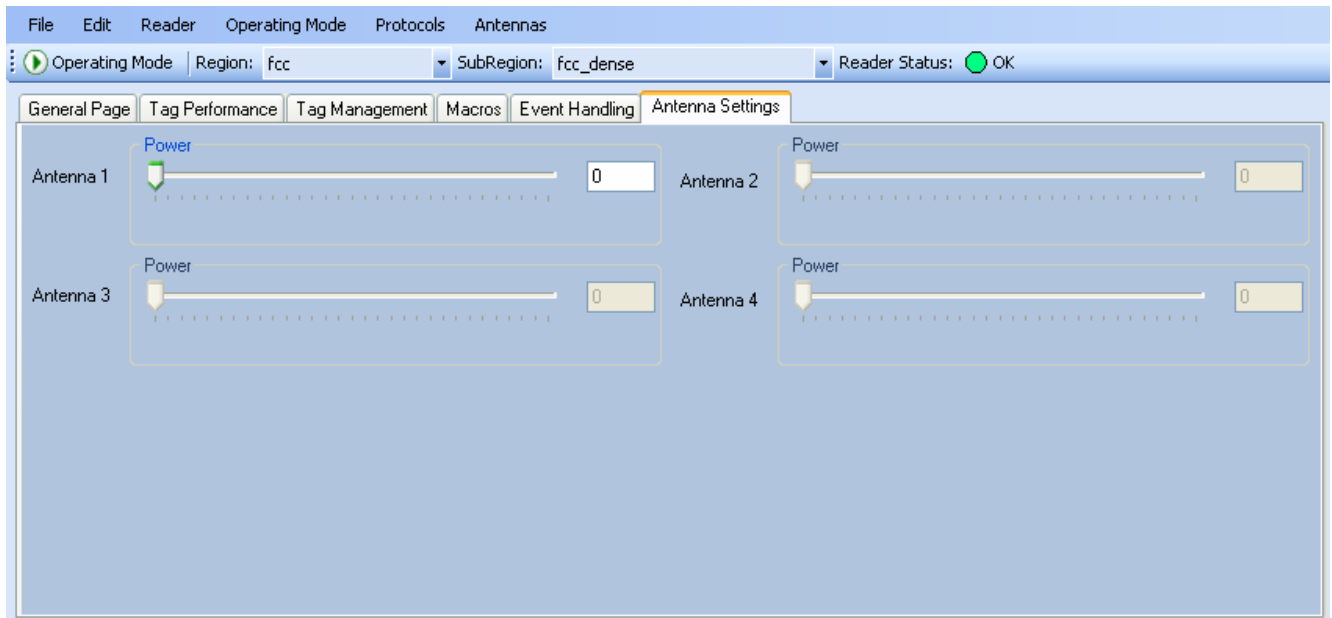
#### Registering for a group of events

Registering for **event.error** events, will cause the reader to autonomously send all events in the **event.error** namespace to the RTT program and be displayed in the window of this page. Enter **event.error** in the **Events:** field and press the **Register** button. The **Clear** button can be selected at any time to clear the window.



### 5.5.6. Antenna Settings Page

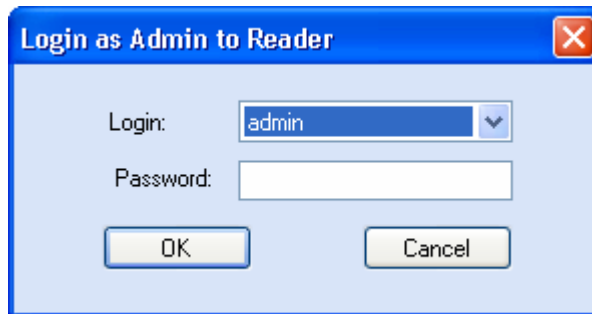
The **Antenna Settings** page allows you to adjust the power settings for each antenna. Only the controls for those antennas that are connected are activated.



## 5.6. Reader Diagnostics Tool (RDT)

The Reader Diagnostic Tool (RDT) is to be used by Sirit trained technicians to troubleshoot and diagnose various reader issues. Administrator login is required.

To use RDT, you must login as an administrator, perform the following. When you first start RDT, the following login will appear:



Enter your **Password**. Enter **readeradmin** or your current administrator password. Press **OK**.

### 5.6.1. Channel Statistics

The **Channel Stats** page shows details of channel changes. This page is typically used to observe regional behavior.

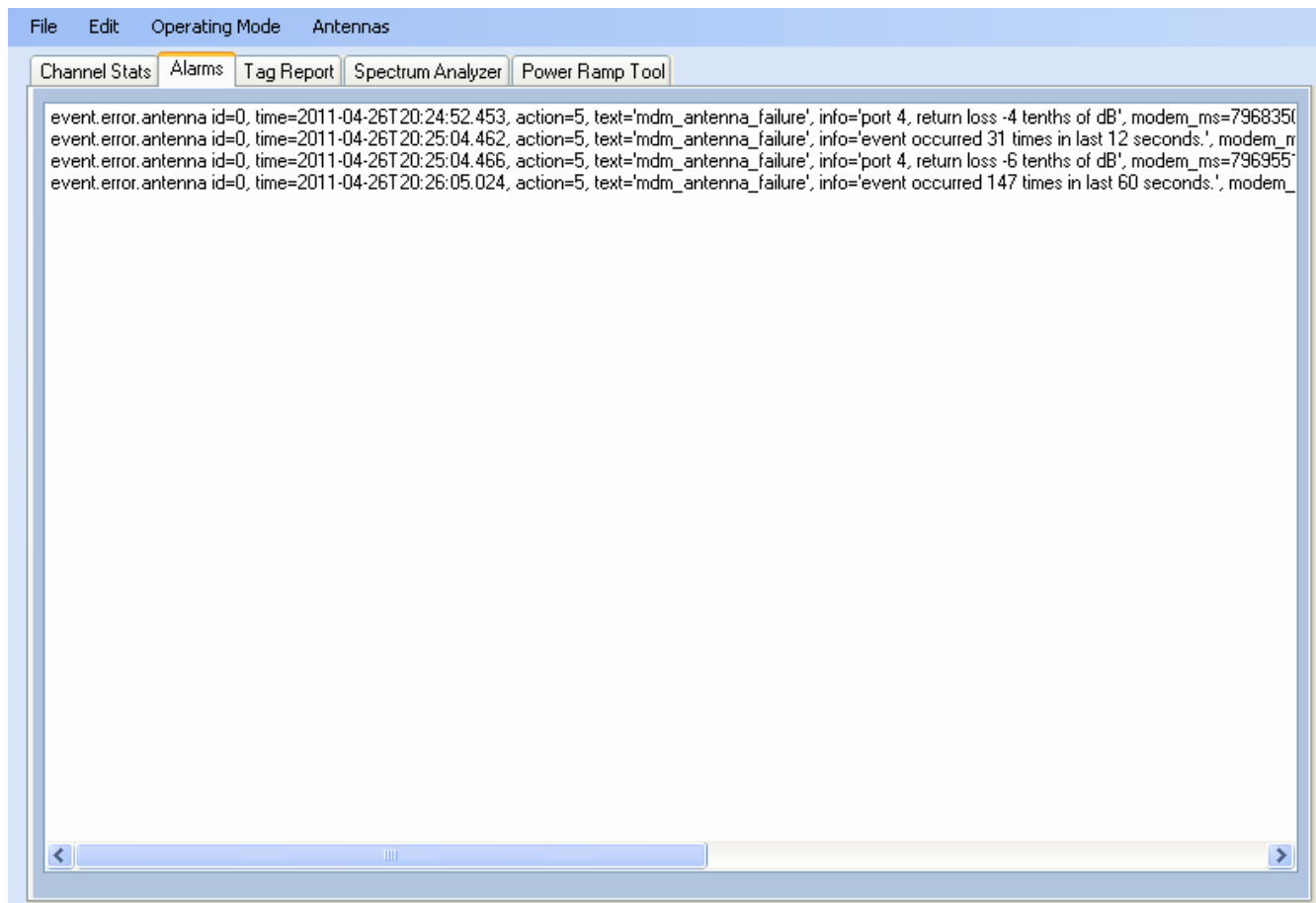
Channel ID	Listen Count	Talk Count	Listen Time	Talk Time	Avg Listen Count	% L
921750	0	1	0	170	0	0
921250	0	1	0	105	0	0
913750	0	1	0	300	0	0
920750	0	1	0	40	0	0
913250	0	1	0	300	0	0
905250	0	1	0	291	0	0
904750	0	1	0	299	0	0
912250	0	1	0	262	0	0
904250	0	1	0	299	0	0
903750	0	0	0	0	0	0
920250	0	1	0	299	0	0
912750	0	1	0	291	0	0
911750	0	1	0	207	0	0
906250	0	1	0	300	0	0

## 5.6.2. Alarms

The **Alarms** page is used to capture autonomous alarms generated by the reader during normal operation. The alarms are defined as autonomous reader events for the following namespaces:

```
event.error
```

```
event.warning
```

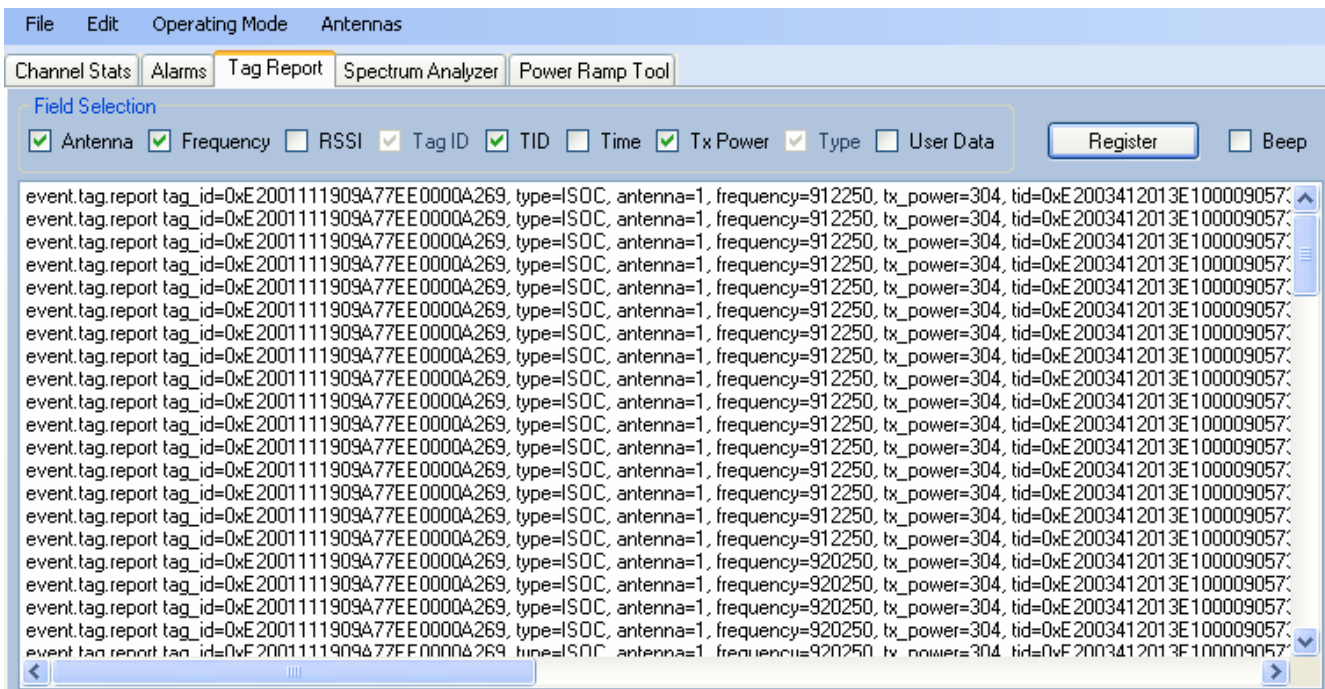


### 5.6.3. Tag Report

The Tag Report page is used to view specific information for each tag singulation. This feature provides detailed attributes of tag singulations such as tag power (RSSI) and on which antenna that tag singulated.



**Caution:** Use of this tool can adversely affect tag reader performance, particularly if many tag fields are enabled. Use the **RTT->Tag Performance** page for normal tag performance testing.

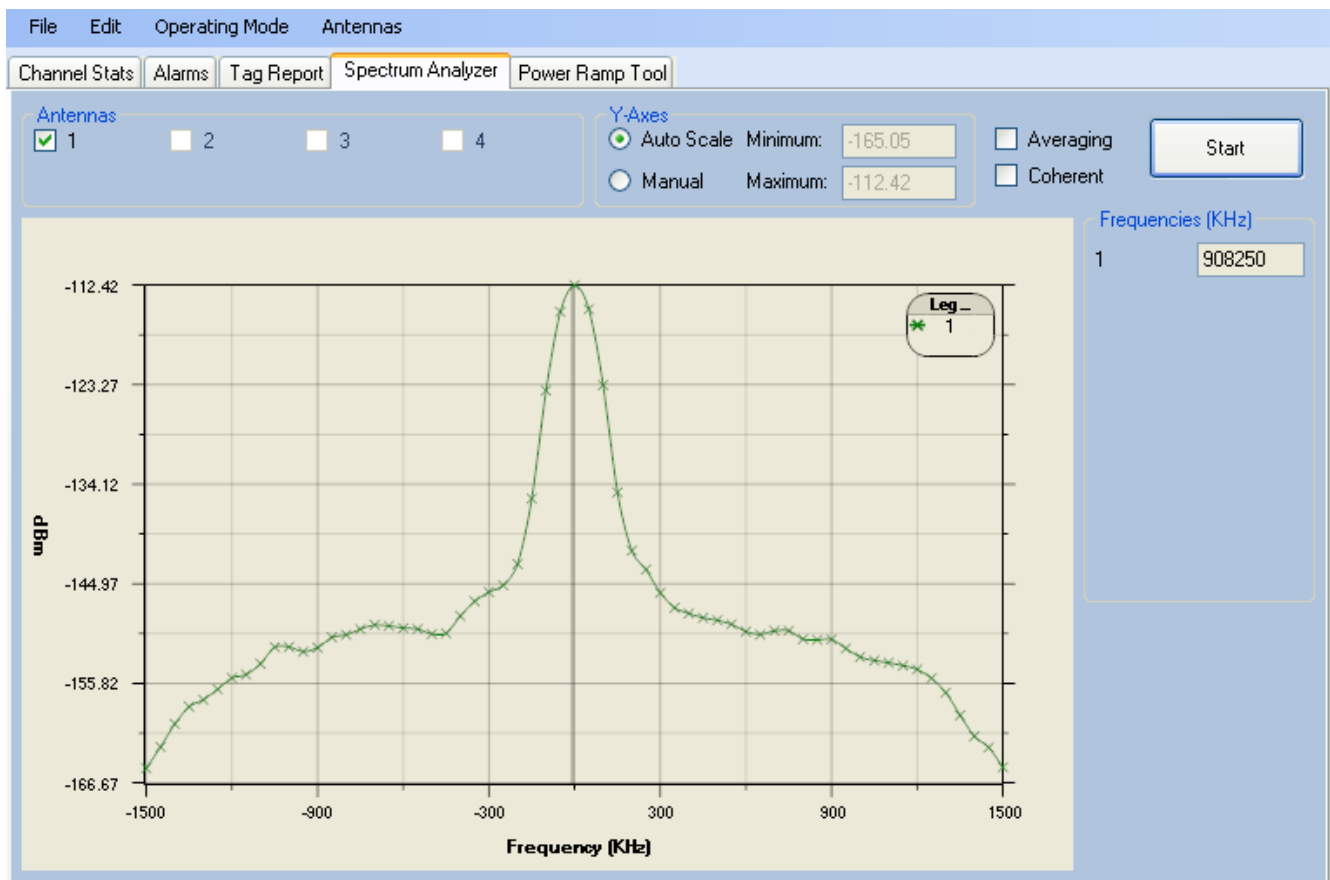


### 5.6.4. Spectrum Analyzer

The Spectrum Analyzer allows you to examine the spectral composition of the radio waves in your surrounding environment. This feature provides a graphical representation of the current spectral RF noise in units of dBm with a range of 0 to -120 dBm. This feature is intended for expert users to verify RF environmental conditions during an installation.



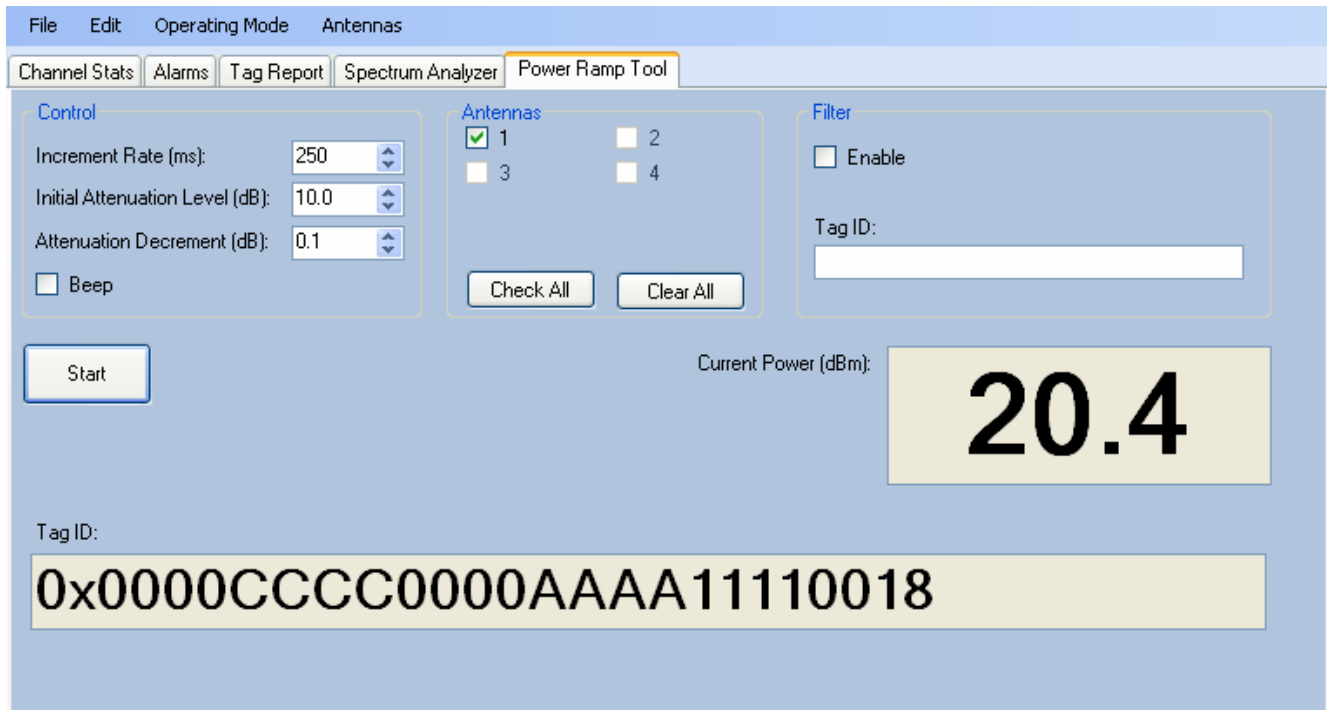
**Caution:** Using this feature during normal reader operation can significantly degrade tag reading performance.



### 5.6.5. Power Ramp Tool

The Power Ramp Tool determines the minimum power to activate a tag and can help determine tag quality. This activation power level can help determine the read range at various attenuation levels and, for AVI applications, can help determine the "read-zone" or an antenna pattern.

The tool starts by configuring the reader to start transmitting at a high attenuation level (usually maximum allowed for reader) and decrements the level until it observes a response from the tag. The transmitter is turned off and the minimum value to activate the tag for a given antenna and distance is reported.



The Power Ramp controls include:

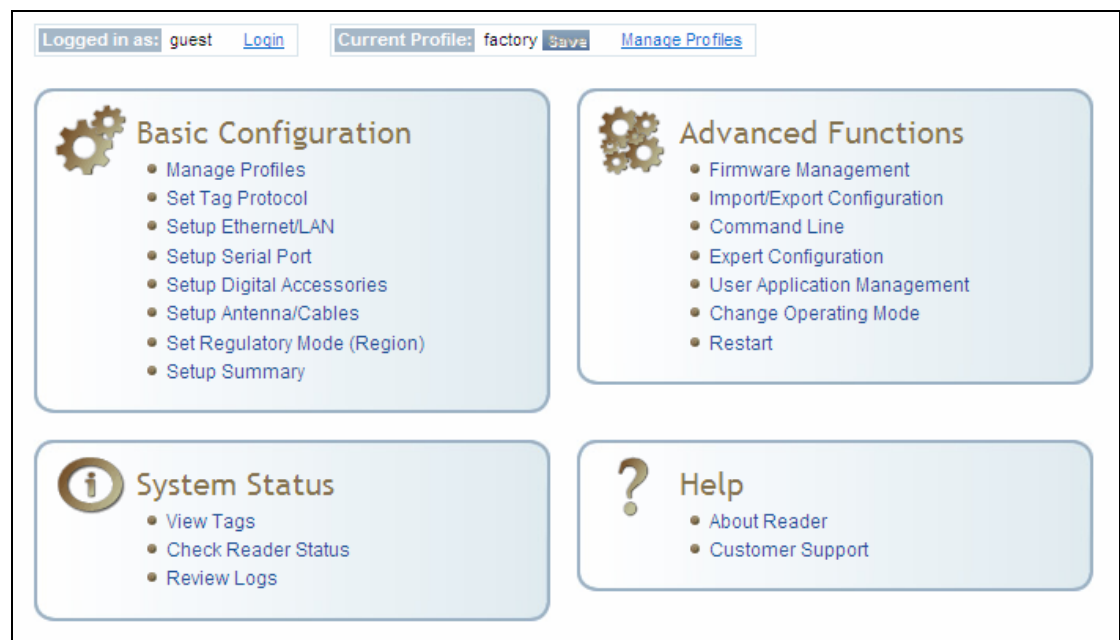
- **Increment Rate (ms)** – Time tool stays at a particular power level before incrementing to the next power level.
- **Initial Attenuation Level (dBm)** – Starting attenuation level.
- **Attenuation Decrement (dBm)** – Step-size for attenuation decrement.
- **Antennas** section allows you to select which antenna(s) to test with.
- **Filter** section allows you to apply a filter to only look for a particular tag.

## 6 Embedded Reader Configuration Tool (RCT)

The Embedded Reader Configuration Tool (RCT) allows you to access your reader across the internet by entering the reader's IP address into your web browser. With the RCT, you can fully configure your reader for operation in a variety of applications and environments. With this application, you can perform the following:

- Basic Configurations
- Advanced Configurations
- Check System Status
- Access the online Help

To access the RCT, press the  button on the main RST page.



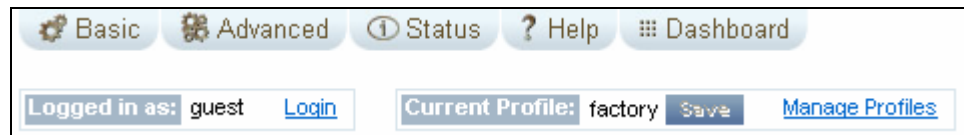
## 6.1. Basic Configuration

With the Basic Configuration functions you can perform the following:

- Manage reader profiles
- Set tag protocols
- Setup the Ethernet/LAN configuration
- Setup the serial port
- Setup digital accessories
- Setup antennas
- Set regulatory modes

### 6.1.1. Configuration Page Header

Each page displayed by the RCT has the following header.



This header provides pull-down menus for each of the configuration function categories. Additional functions include the user login and the currently loaded reader profile.

#### Login

The reader's default user level is **guest**. However, a user can login as **admin**. If not logged in as **admin**, the default level is always **guest**.

The guest login level provides read-only access to the reader. Clients that login in at the guest level can read the settings of the reader and can access the tags that the reader has inventoried. Clients at this level cannot change the configuration of the reader.

The admin login level provides read-write access to the reader. Clients that login in at the admin level can read and write the settings of the reader and can access the tags that the reader has inventoried.

#### Logout

After logging in as **admin**, the **Logout** button logs you out of the reader. Logging out automatically sets the login level to guest.

#### Profile:

Profile is the currently active profile in the reader. Refer to the *Manage Profiles* section for detailed information on reader profiles.



## Save

The Save button saves the reader's current configuration to the specified profile. Refer to the *Manage Profiles* section for detailed information on reader profiles.

## Manage Profiles

This link allows you to list, save, and delete profiles. Refer to the *Manage Profiles* section for detailed information on reader profiles.

### 6.1.2. Manage Profiles

The reader's configuration is stored in a profile. A profile contains the setting of all the configuration variables in the reader. The reader can support up to 8 unique profiles. Detailed information about reader profiles is provided in *Chapter 4 – Reader Behavior* of the **IDentity 6204 Protocol Reference Guide**.

The **Manage Profiles** page provides a list of all profiles stored in the reader.

Save reader configuration state and set new current profile as :

Profile Name	Activate	Delete	?
avi	<input type="button" value="Activate"/>	<input type="button" value="Delete"/>	?
portal	<input type="button" value="Activate"/>	<input type="button" value="Delete"/>	?

**Factory Defaults**

- Reset Factory Profile
- Stop All Embedded Applications
- Reset Serial Port
- Reset Network Interface Configuration

## Save a Profile

To save your current reader configuration under a new profile, enter a profile name and press **Save**. The new profile will appear in the Profile Name list. Profile names must consist of the characters A - Z, a - z, 0 - 9, '!' or '\_' and must be between 1 and 32 characters in length. The reader can store up to 8 different profiles.

### Profile Names

The profile name **factory** is reserved and cannot be used. This profile is a read only profile.

### Activate a Profile

To activate a previously saved profile, press the **Activate** button beside the profile name. The selected profile will be loaded into the reader.

### Delete a Profile

To delete a previously saved profile, press the **Delete** button beside the profile name. This is a destructive operation. Once a profile is deleted, it cannot be recovered.

### Reset to Factory Default

In addition to managing reader profiles, you can also reset the reader back to its factory default configuration. From the Profiles page select one or more of the following:

- **Stop All Embedded Applications** – This option terminates any embedded applications currently running on the reader.
- **Reset Serial Port** – This option resets the serial port configuration to the factory default settings.
- **Reset Network Interface Configuration** – This option resets the network configuration to factory defaults.



**Caution:** *Resetting the IDentity 6204 to Factory Default will reboot the reader.*

### 6.1.3. Set Tag Protocol

**Basic Configuration**

- Manage Profiles
- Set Tag Protocol
- Setup Ethernet/LAN
- Setup Serial Port
- Setup Digital Accessories
- Setup Antenna/Cables
- Set Regulatory Mode (Region)
- Setup Summary

This **Set Tag Protocol** page consists of two forms. The first form (top) allows you to select which type of tags the reader will acquire or the type of protocol(s) to utilize on the air interface.

**Protocol Configuration**

Advanced protocol options are available under Advanced->Expert Configuration->Modem.

Protocols:  ISOC  ISOB  EASALARM  ASTMV6  ISO10374  ISOB\_80K  PS111  T21

**Enable Selected Protocols**

Select Protocol to Configure:

ISOC ISOB ISO10374

Select the check box for the protocol(s) to enable and then press **Enable Selected Protocols** to activate the protocol.

Click on a specific protocol to view the lower form. This form allows you to configure various protocol level parameters. The protocol level parameters are divided into two categories: control and physical. Control parameters configure the protocol control. Physical parameters configure the physical air interface for the protocol.

**Control**

Name	Value	?
Command Retried	3	?
Display Tag CRC	false	?
Mem Bank For Selection	membank_epc	?
Number Slots Q	0	?
Select Cmd Period	0	?
Session ID	session_1	?
Transmit Attenuation	0	?
User Block Write	false	?

**Physical**

Name	Value	?
Mode	4 - Miller4/LF240/12.5tarj/PR_ASK	?
Modulation Depth	90	?
Pilot Tone	true	?

For detailed information on each of the Control and Physical parameters, refer to *Chapter 15 – Modem Namespace* of the **IDentity 6204 Protocol Reference Guide**. Parameter descriptions are provided in the `modem.protocol.isoc.control` and `modem.protocol.isoc.physical` configuration variable sections.

### 6.1.4. Setup Ethernet/LAN

**Basic Configuration**

- Manage Profiles
- Set Tag Protocol
- Setup Ethernet/LAN
- Setup Serial Port
- Setup Digital Accessories
- Setup Antenna/Cables
- Set Regulatory Mode (Region)
- Setup Summary

The Setup Ethernet/LAN page allows you to configure the network interface of the reader.

**NOTE:**  
 Always record the IP, Mac, subnet, and default gateway addresses for your readers and keep this data in a safe location. You can use this data to reconfigure the network in the event of application failure or data loss.

General Settings		
Name	Value	?
Host Name	<input type="text" value="EP4-C5"/>	?
Command Port	<input type="text" value="50007"/>	?
Event Port	<input type="text" value="50008"/>	?
Domain Name	<input type="text" value="fsgn.net"/>	?
Mac Address	<input type="text" value="00:17:9E:BC:14:2C"/>	?
IPv4 Settings		
Name	Value	?
Method	<input type="text" value="dhcp"/>	?
IP Address	<input type="text" value="10.1.1.61"/>	?
Subnet Mask	<input type="text" value="255.255.255.0"/>	?
Default Gateway	<input type="text" value="10.1.1.1"/>	?
IPv6 Settings		
Name	Value	?
Method	<input type="text" value="radv_only"/>	?
IP Addresses	<input type="text" value="fe80::217:9eff:febc:142c"/>	?
Default Gateway	<input type="text" value="none"/>	?
Other Settings		
Name	Value	?
NTP Servers	<input type="text" value="time.fsgn.net"/>	?
DNS Servers	<input type="text" value="10.15.3.24 10.1.1.204"/>	?
Domain List	<input type="text" value="fsgn.net"/>	?

**General Settings** allow you to specify the host and domain name of the reader. The Command and Event Ports are also shown. You can also select your domain name in this window.

**IPv4/IPv6 Settings** allow you to configure the reader's IP address. If the reader is to automatically acquire its IP address, subnet mask and default gateway from a DHCP server, select **Enable DHCP**. To manually specify this information, deselect **Enable DHCP** and fill in the desired IP address, subnet mask and default gateway.

**Other Settings** allow you to configure the NTP servers the reader can contact to obtain the current time, DNS servers the reader can contact for domain name resolution, and the Domain list to resolve names to IP addresses.

Enter all the required information and press **Submit**.

### 6.1.5. Setup Serial Port



**Basic Configuration**

- Manage Profiles
- Set Tag Protocol
- Setup Ethernet/LAN
- Setup Serial Port
- Setup Digital Accessories
- Setup Antenna/Cables
- Set Regulatory Mode (Region)
- Setup Summary

The Setup Serial Port function allows you to configure the serial port parameters. These parameters include:

- Baud rate
- Data bits
- Parity
- Echo
- Stop bits

Name	Value	?
Baudrate	115200 ▾	?
Data Bits	8 ▾	?
Parity	NONE ▾	?
Echo	true ▾	?
Stopbits	1 ▾	?

Use the pull-down menus to select a value and press **Submit** to update the reader.

### 6.1.6. Setup Digital Accessories

 **Basic Configuration**

- Manage Profiles
- Set Tag Protocol
- Setup Ethernet/LAN
- Setup Serial Port
- Setup Digital Accessories
- Setup Antenna/Cables
- Set Regulatory Mode (Region)
- Setup Summary

The Setup Digital Accessories function allows you to configure the Digital Inputs and Outputs on the reader.

Digital Input			
Name	Current Value	Debounce	?
1	true <input type="button" value="v"/>	<input type="text" value="30"/>	?
2	true <input type="button" value="v"/>	<input type="text" value="30"/>	?
3	true <input type="button" value="v"/>	<input type="text" value="30"/>	?
4	true <input type="button" value="v"/>	<input type="text" value="30"/>	?

Digital Output		
Name	Current Value	?
1	false <input type="button" value="v"/>	?
2	false <input type="button" value="v"/>	?
3	false <input type="button" value="v"/>	?
4	false <input type="button" value="v"/>	?

#### Digital Input

The status of the four digital input values (1-4) can be seen in this window. The **Current Value** is not configurable and is shown as **true** or **false**. The Debounce value can be set and is in milliseconds.

#### Digital Output

The output value for each digital output can be set to **true** or **false**. Press the **Submit** button to send the appropriate commands to the reader to update the digital inputs and outputs.

Refer to the **IDentity 6204 Protocol Reference Guide** for more information on configuring the digital inputs and outputs.

### 6.1.7. Setup Antenna/Cables



**Basic Configuration**

- Manage Profiles
- Set Tag Protocol
- Setup Ethernet/LAN
- Setup Serial Port
- Setup Digital Accessories
- Setup Antenna/Cables
- Set Regulatory Mode (Region)
- Setup Summary

This page allows you to configure the reader’s antenna multiplexer sequence as well as conducted power. For detailed descriptions of each of the antenna and cable variables, refer to Antenna Configuration in *Chapter 4 – Reader Behavior* of the **IDentity 6204 Protocol Reference Guide**.

To configure an antenna, enter the antenna number in the **Mux Sequence** field. The individual antenna **Conducted Power** fields will be activated in the lower window. The current values will be displayed. Only those antennas listed in the **Mux Sequence** will be shown. Also, you must set **Conducted Power** to **0** in order to set or change the **Attenuation**, **Cable Loss**, or **Gain**.

To change, enter the appropriate values for each antenna parameter and press the **Submit** button to update the antenna and cable configuration. Select the next antenna and repeat.

Name	Value	?
Detected Antennas	<input style="width: 95%;" type="text"/>	?
Port Count	<input style="width: 95%;" type="text" value="4"/>	?
Configuration	<input style="width: 95%;" type="text" value="all_monostatic"/> ▼	?
Mux Sequence	<input style="width: 95%;" type="text" value="1 2 3 4"/>	?

This table provides information related to the individual antennas.

Name	Antenna 1	Antenna 2	Antenna 3	Antenna 4	?
Conducted Power	<input style="width: 90%;" type="text" value="0"/>	<input style="width: 90%;" type="text" value="0"/>	<input style="width: 90%;" type="text" value="0"/>	<input style="width: 90%;" type="text" value="0"/>	?
Attenuation	<input style="width: 90%;" type="text" value="0"/>	<input style="width: 90%;" type="text" value="0"/>	<input style="width: 90%;" type="text" value="0"/>	<input style="width: 90%;" type="text" value="0"/>	?
Cable Loss	<input style="width: 90%;" type="text" value="10"/>	<input style="width: 90%;" type="text" value="10"/>	<input style="width: 90%;" type="text" value="10"/>	<input style="width: 90%;" type="text" value="10"/>	?
Gain	<input style="width: 90%;" type="text" value="130"/>	<input style="width: 90%;" type="text" value="130"/>	<input style="width: 90%;" type="text" value="130"/>	<input style="width: 90%;" type="text" value="130"/>	?
Gain Units	<input style="width: 90%;" type="text" value="dbi"/> ▼	<input style="width: 90%;" type="text" value="dbi"/> ▼	<input style="width: 90%;" type="text" value="dbi"/> ▼	<input style="width: 90%;" type="text" value="dbi"/> ▼	?
Computed Conducted Power	<input style="width: 90%;" type="text" value="340 (ddBm), 2.51 (W)"/>	<input style="width: 90%;" type="text" value="340 (ddBm), 2.51 (W)"/>	<input style="width: 90%;" type="text" value="340 (ddBm), 2.51 (W)"/>	<input style="width: 90%;" type="text" value="340 (ddBm), 2.51 (W)"/>	?

### 6.1.8. Set Regulatory Mode (Region)

 **Basic Configuration**

- Manage Profiles
- Set Tag Protocol
- Setup Ethernet/LAN
- Setup Serial Port
- Setup Digital Accessories
- Setup Antenna/Cables
- Set Regulatory Mode (Region)
- Setup Summary

This page allows the user to configure the reader to meet the regulatory requirements for the geographic region where the reader is deployed. The sub-region sets the secondary regulatory mode for the geographic region where the reader is deployed.

Name	Value	?
Region	fcc	?
Sub Region	fcc_part90_dense	?

For detailed information on each of these parameters, refer to the **Identity 6204 Protocol Reference Guide**. Descriptions are provided in the `setup.region` and `setup.sub_region` configuration variable sections.

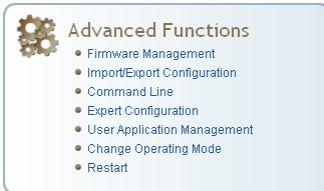
### 6.1.9. Setup Summary

This page allows you to quickly setup the basic operational parameters of the reader.

Name	Value	?
Region	fcc	?
Sub Region	fcc_part90_dense	?
Protocols	<input checked="" type="checkbox"/> ISOC <input type="checkbox"/> ISOB <input type="checkbox"/> EASALARM	?
<b>Antenna Selection</b>		
Name	Value	?
Antennas	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4	?



## 6.2. Advanced Functions



With the Advanced Functions you can perform the following:

- Firmware Management
- Import/Export Configuration
- Command Line operations
- Expert Configuration
- User Application Management
- Change Operating Mode
- Restart

### 6.2.1. Firmware Management

This page allows you to read the current firmware version, upgrade the reader firmware files, or rollback to the previous firmware version.

To upgrade reader firmware, enter the name of the Sirit provided firmware file in the **Firmware File** field. Use the **Browse** button to help locate the file. Once the filename is entered, press **Upgrade Firmware**. Note that this function also upgrades the LLRP Component firmware.

To only upgrade the LLRP firmware, enter the name of the Sirit provided LLRP firmware file in the **Update File** field. Use the **Browse** button to help locate the file. Once the filename is entered, press **Update Component**.

The **Rollback Firmware** button will roll back the firmware to the previous version. This function does not rollback the LLRP component firmware. You will need to update the component with a previous version.

### Firmware Management

#### Upgrade Firmware

Current Firmware version: 1.0.19278

Firmware File:

#### Rollback Firmware

Firmware rollback version: 1.0.19254

#### LLRP Component Firmware

Current Component version: 334

Update File:

## 6.2.2. Import/Export Configuration

This page allows you to transfer a reader configuration to or from your host computer. This is useful for configuring a reader to a known state.



### Advanced Functions

- Firmware Management
- Import/Export Configuration
- Command Line
- Expert Configuration
- User Application Management
- Change Operating Mode
- Restart

### Import Configuration to Reader

Configuration file:

XML File  Text File

### Export Configuration from Reader

### Import Licenses

This section is for importing of reader feature license files to the reader.

License file:

### Import Security Keys

This section is for importing of reader security keys to the reader.

Key file:

### Import Configuration to Reader

Enter the name of a saved configuration file in the **Configuration file** field. Select the **XML File** option and press the **Transfer Configuration to Reader** button to send the profile to the reader.

### Export Configuration from Reader

This function is used to export the current reader settings for later uploading. Press the **XML Format** button to view the XML file in the browser. Save this file to your computer if you wish retain it for future.

If you wish to view the current configuration parameters for a reader, press **Text Format** button.

### Import Licenses

This function is used to import a feature license file. Navigate to the license file and press **Import License** to load the file into the reader.

### Import Security Keys

This function is used to import reader security keys to the reader. Navigate to the key file and press **Import Security Keys** to load the file into the reader.

### 6.2.3. Command Line



#### Advanced Functions

- Firmware Management
- Import/Export Configuration
- Command Line
- Expert Configuration
- User Application Management
- Change Operating Mode
- Restart

This page allows you to directly enter reader commands from your web browser. To directly enter commands from the Command Line Interface (CLI), refer to the **IDentity 6204 Protocol Reference Guide**.

Command:

Response

```
ok
reader_uptime = 24183,
in_use_memory = 61427712,
free_memory = 2076672,
cpu_load = 2,
modem_alive = true,
modem_uptime = 24075,
antenna_status = ok,
tx_interlock = false,
synth_locked = true,
ps_fault = true
```

## 6.3. Expert Configuration

**Advanced Functions**

- Firmware Management
- Import/Export Configuration
- Command Line
- Expert Configuration
- User Application Management
- Change Operating Mode
- Restart

**NOTE**  
 For details on reader variables, refer to the *IDentity 6204 Protocol Reference Guide*.

The Expert Configuration functions allow you to configure low-level functions within the reader. These functions should only be accessed by expert users. Expert configurations include:

- Setup
- Tag
- Version
- Information
- Communication
- Antennas
- Digital I/O
- Modem

### 6.3.1. Expert Configuration – Setup

This page allows you to set the basic operating parameters of the reader including region, sub region, mode, and active protocols. You can also view the valid protocols and regions.

Name	Value	?
setup.default_login_level	admin	?
setup.install_type	vehicle	?
setup.operating_mode	standby	?
setup.protocols	isoc	?
setup.region	fcc	?
setup.sub_region	fcc_part90_dense	?
setup.tag_volume	1	?
setup.valid_protocols	isoc isob	?
setup.valid_regions	fcc	?
setup.valid_sub_regions	fcc_part90_dense fcc_part90 fcc_part90_lowband	?
setup.advanced.preferred_frequencies	0	?

### 6.3.2. Expert Configuration – Tag

- Advanced Functions**
- Firmware Management
  - Import/Export Configuration
  - Command Line
  - Expert Configuration
  - User Application Management
  - Change Operating Mode
  - Restart

**NOTE**

For details on tag variables, refer to the *IDentity 6204 Protocol Reference Guide*.

This page allows you to configure how the reader reports tags.


The IDentity 6204 supports the ability to filter tags or eliminate tags from being reported based on the conditions specified in the filter configuration variables. The reader supports eight filters and each filter is specified by the following configuration variables:

- **enabled** – Enables or disables the filter.
- **inclusive** – Indicates to either include tags that match (Inclusive) or include tags that do not match (Exclusive) the tag filter.
- **mask** – Mask (as an array of hex bytes) for the tag filter.
- **name** – Name given to the tag filter
- **pattern** – Pattern (as an array of hex bytes) for the tag filter

The following figure shows a small sample of the available variables.

Name	Value	?
tag.db.max_count	10000	?
tag.db.max_user_data	32	?
tag.filter.1.enabled	false	?
tag.filter.1.inclusive	true	?
tag.filter.1.mask	00	?
tag.filter.1.name		?
tag.filter.1.pattern	00	?
tag.reporting.antenna_cross_fields	tag_id antenna	?
tag.reporting.arrive_fields	tag_id	?
tag.reporting.depart_fields	tag_id	?
tag.reporting.depart_time	1000	?
tag.reporting.raw_tag_data	false	?
tag.reporting.report_fields	tag_id rssi	?
tag.reporting.report_write_verify	false	?
tag.reporting.taglist_fields	tag_id repeat antenna time type	?
tag.reporting.ambient.enabled	false	?
tag.reporting.antenna_cross.enabled	false	?
tag.reporting.antenna_cross.max_speed	10	?
tag.reporting.antenna_cross.performance_metric	4	?

### 6.3.3. Expert Configuration – Version



**Advanced Functions**

- Firmware Management
- Import/Export Configuration
- Command Line
- Expert Configuration
- User Application Management
- Change Operating Mode
- Restart

This page displays the version of reader hardware and reader software within the reader. The version numbers are read-only and will be needed if you contact Sirit for technical support.

Name	Value	?
version.hw	A	?
version.hw_detail	KX1060-4, M, 10-24-2011	?
version.llrp	334	?
version.rollback	1.0.19281	?
version.sw	1.0.19289	?
version.sw_detail	sw = 1.0.19289, fw = 19289, dsp = 5.0, fpga = 0x000A	?

### 6.3.4. Expert Configuration – Information

This page allows you to customize the reader’s identity. You can assign each reader a name, description, location, and zone. You can also set how the reader reports timestamps.

Name	Value	?
info.agency_code	<input type="text" value="0x0000"/>	?
info.description	<input type="text" value="unknown"/>	?
info.location	<input type="text" value="unknown"/>	?
info.make	<input type="text" value="IDentity"/>	?
info.manufacturer	<input type="text" value="Sirt"/>	?
info.manufacturer_description	<input type="text" value="Sirt Technologies"/>	?
info.model	<input type="text" value="6204"/>	?
info.name	<input type="text" value="unknown"/>	?
info.reader_id	<input type="text" value="0x00000000"/>	?
info.serial_number	<input type="text" value="96098402038C09FF"/>	?
info.sub_model	<input type="text" value="4"/>	?
info.support_contact	<input type="text" value="unknown"/>	?
info.time	<input type="text" value="2000-09-10T01:26:51.794"/>	?
info.time_reporting	<input type="text" value="local"/> ▼	?
info.time_zone	<input type="text" value="GMT"/>	?



### 6.3.5. Expert Configuration – Communication

**Advanced Functions**

- Firmware Management
- Import/Export Configuration
- Command Line
- Expert Configuration
- User Application Management
- Change Operating Mode
- Restart

This page allows you to customize the reader’s communication parameters. Refer to the **Setup Ethernet/LAN** and **Setup Serial Port** sections for additional information.

The following figure shows a portion of communication parameters available on the reader.

**NOTE**  
For details on communication parameters, refer to the *IDentity 6204 Protocol Reference Guide*.

Name	Value	?
com.event.overflow_backoff_time	3	?
com.llrp.client_ip_address		?
com.llrp.keepalive_count	3	?
com.llrp.log_level	error	?
com.llrp.reader_init_conn	false	?
com.network.dns_servers	10.1.1.2 10.1.1.18	?
com.network.domain_list	sint.com	?
com.network.domainname	sint.com	?
com.network.hostname	sint_110	?
com.network.ntp_servers	10.2.0.1	?
com.network.tcpkeepalive	true	?
com.network.tcpsynretries	5	?
com.network.1.default_gateway	10.1.1.1	?
com.network.1.ip_address	10.1.1.64	?
com.network.1.ipv6_address	fe80::217:9eff:fe00:152/64	?
com.network.1.ipv6_default_gateway	none	?
com.network.1.ipv6_method	radv_only	?
com.network.1.mac_address	00:17:9E:00:01:52	?
com.network.1.method	dhcp	?
com.network.1.settings	method=dhcp, ipv6_method=radv_only	?
com.network.1.subnet_mask	255.255.255.0	?
com.network.discovery.autonomous	true	?
com.network.discovery.ipv6_request_address	ff04::efc0:0164	?

### 6.3.6. Expert Configuration – Antennas



**Advanced Functions**

- Firmware Management
- Import/Export Configuration
- Command Line
- Expert Configuration
- User Application Management
- Change Operating Mode
- Restart


This page allows you to configure the properties of the reader’s antenna configuration. For detailed description of each of the antenna and cable variables, refer to the Antenna Configuration section in *Chapter 4 – Reader Behavior* of the **IDentity 6204 Protocol Reference Guide**.

Enter the appropriate values for each antenna parameter and press the **Submit** button to update the antenna and cable configuration.

The following figure shows only a small sample of the available antenna configuration variables.

Name	Value	?
antennas.detected	<input type="text" value="1 2 3 4"/>	?
antennas.mux_sequence	<input type="text" value="1"/>	?
antennas.port_count	<input type="text" value="4"/>	?
antennas.1.conducted_power	<input type="text" value="212"/>	?
antennas.1.advanced.attenuation	<input type="text" value="0"/>	?
antennas.1.advanced.cable_loss	<input type="text" value="10"/>	?
antennas.1.advanced.computed_conducted_power	<input type="text" value="0"/>	?
antennas.1.advanced.gain	<input type="text" value="60"/>	?
antennas.1.advanced.gain_units	<input type="text" value="dbdc"/>	?
antennas.check.time	<input type="text" value="0"/>	?
antennas.check.type	<input type="text"/>	?
antennas.lbt.listen_port	<input type="text"/>	?
antennas.lbt.advanced.cable_loss	<input type="text" value="10"/>	?
antennas.lbt.advanced.gain	<input type="text" value="60"/>	?
antennas.lbt.advanced.gain_units	<input type="text" value="dbdc"/>	?

### 6.3.7. Expert Configuration – Digital I/O




**Advanced Functions**

- Firmware Management
- Import/Export Configuration
- Command Line
- Expert Configuration
- User Application Management
- Change Operating Mode
- Restart

This page allows you to configure the digital inputs and output behavior. You can set the digital input debounce time (in milliseconds), as well as the input and output pin values. Refer to the **IDentity 6204 Protocol Reference Guide** for detailed information on each of these variables.

Name	Value	?
dio.debounce.1	<input type="text" value="30"/>	?
dio.debounce.2	<input type="text" value="30"/>	?
dio.debounce.3	<input type="text" value="30"/>	?
dio.debounce.4	<input type="text" value="30"/>	?
dio.in.1	<input type="text" value="1"/>	?
dio.in.2	<input type="text" value="1"/>	?
dio.in.3	<input type="text" value="1"/>	?
dio.in.4	<input type="text" value="1"/>	?
dio.in.all	<input type="text" value="0xF"/>	?
dio.in.alarm.logic_level.1	<input type="text" value="1"/>	?
dio.in.alarm.logic_level.2	<input type="text" value="1"/>	?
dio.in.alarm.logic_level.3	<input type="text" value="1"/>	?
dio.in.alarm.logic_level.4	<input type="text" value="1"/>	?
dio.in.alarm.timeout.1	<input type="text" value="0"/>	?
dio.in.alarm.timeout.2	<input type="text" value="0"/>	?
dio.in.alarm.timeout.3	<input type="text" value="0"/>	?
dio.in.alarm.timeout.4	<input type="text" value="0"/>	?
dio.out.1	<input type="text" value="0"/>	?
dio.out.2	<input type="text" value="0"/>	?
dio.out.3	<input type="text" value="0"/>	?
dio.out.4	<input type="text" value="0"/>	?
dio.out.all	<input type="text" value="0x0"/>	?

### 6.3.8. Expert Configuration – Modem

 **Advanced Functions**

- Firmware Management
- Import/Export Configuration
- Command Line
- Expert Configuration
- User Application Management
- Change Operating Mode
- Restart

This page allows you to set the reader’s modem control variables. These variables control functions such as EPC link, modulation depth, return link frequency, and others. Refer to the **Identity 6204 Protocol Reference Guide** for detailed information on each of these variables. The following figure shows only a small sample of the available modem configuration variables.

Name	Value	?
modem.debug.db0	<input type="text" value="0"/>	?
modem.debug.db1	<input type="text" value="0"/>	?
modem.debug.db2	<input type="text" value="0"/>	?
modem.debug.db9	<input type="text" value="0"/>	?
modem.diag.current_temperature	<input type="text" value="39"/>	?
modem.diag.error_handler.period	<input type="text" value="60"/>	?
modem.protocol.cmd_retries	<input type="text" value="3"/>	?
modem.protocol.easalarm.control.tx_atten	<input type="text" value="0"/>	?
modem.protocol.isob.control.auto_quiet	<input type="text" value="false"/>	?
modem.protocol.isob.control.cmd_retries	<input type="text" value="3"/>	?
modem.protocol.isob.filter.1.address	<input type="text" value="0"/>	?
modem.protocol.isob.filter.1.data	<input type="text" value="00"/>	?
modem.protocol.isob.filter.1.enabled	<input type="text" value="false"/>	?
modem.protocol.isob.filter.1.mask	<input type="text" value="0"/>	?
modem.protocol.isob.filter.1.opcode	<input type="text" value="select_eq_flags"/>	?
modem.protocol.isoc.filtering.enabled	<input type="text" value="false"/>	?
modem.protocol.isoc.filtering.truncated_epc_response	<input type="text" value="false"/>	?
modem.protocol.isoc.filtering.truncated_tag_epc_length	<input type="text" value="0"/>	?
modem.protocol.isoc.filtering.use_session	<input type="text" value="false"/>	?
modem.protocol.isoc.nxp.easalarm_on_collision	<input type="text" value="false"/>	?
modem.protocol.isoc.physical.data_1_length	<input type="text" value="d1_len_20"/>	?

## 6.4. User Application Management



### Advanced Functions

- Firmware Management
- Import/Export Configuration
- Command Line
- Expert Configuration
- User Application Management
- Change Operating Mode
- Restart

This page lists any user applications currently available on the reader and if any applications are running. This page also allows you to upload applications to the reader.

### Running User Applications

There are no user applications running on the reader.

### Application Transfer

Application to Transfer:

### Applications available on the reader

Application Name	View	Delete
display_rs232.py <input type="button" value="v"/>	<input type="button" value="View"/>	<input type="button" value="Delete"/>

### Start Applications

Type	Name	Options	Autostart	Submit
Python Applications	display_rs232.py <input type="button" value="v"/>	Arguments: <input type="text"/>	False <input type="button" value="v"/>	<input type="button" value="Go"/>
Java Applications	rapid22.jar <input type="button" value="v"/>	Arguments: <input type="text"/> Class Path: <input type="text"/> Jar: <input type="text"/>	False <input type="button" value="v"/>	<input type="button" value="Go"/>

- **Running User Applications** – Lists any user applications currently running on the reader. The application name, process ID, configuration, and status are provided. Controls are provided to view the application file and stop the application.
- **Application Transfer** – This function allows you to load custom user applications onto the reader.
- **Applications available on the reader** – This function allows you to view a list of all user applications stored on the reader. Controls are provided to view the application and delete it from the reader.
- **Start Applications** – This function allows you to start Python and Java applications.

## 6.5. Change Operating Mode



### Advanced Functions

- Firmware Management
- Import/Export Configuration
- Command Line
- Expert Configuration
- User Application Management
- Change Operating Mode
- Restart

This page allows you to configure the operational mode of the reader.

Select	Operating Mode	?
<input type="radio"/>	Active Mode	?
<input checked="" type="radio"/>	Stand By Mode	?

The reader supports the following operational modes:

- ▶ **Active Mode** - Reader is continuously attempting to singulate tags and automatically reports any singulated tag via an asynchronous event notification on the event channel.
- ▶ **Stand By Mode** - Reader is not transmitting any energy, unless processing a tag related command. The RF transmitter is enabled at the beginning of the command processing, any protocol operations required for the command are performed, and then the RF transmitter is turned back off.

## 6.6. View Tags

**i** System Status

- View Tags
- Check Reader Status
- Review Logs

All tags read by the reader are stored in a database on the reader. This page allows you to view the tags in the database as well as change the current Operating Mode (**Active** or **Stand By**).

Press **Start** to begin displaying the tag database. This page is automatically refreshed every five seconds. Press **Get Once** to update the database one time (refresh is off). Press **Purge** to purge all tags from the database.

### Reader Operating Mode

The current reader operating mode is displayed as the default item in the pulldown list. To change the operating mode, highlight and select the desired mode from the list.

Select	Operating Mode	
<input type="radio"/>	Active Mode	?
<input checked="" type="radio"/>	Stand By Mode	?

### Tag Database Display

Click on the 'Start' button to begin a display of the reader tag database and continuously refresh the display for the specified polling period. The 'Stop' button stops updating the display of the reader tag database. The 'Get Once' button can be used to display the reader tag database a single time. The 'Purge' button purges all tags from the reader tag database.

Tag ID	Protocol	Antenna	Repeat Counts	First Read Time	Last Read Time
0x3005FB63AC1F3681EC880468	ISOC	1	53	2009-06-08T15:54:37.117	2009-06-08T15:54:38.722

Polling Period (seconds):

## 6.7. Check Reader Status

- i** System Status
- View Tags
  - Check Reader Status
  - Review Logs

This page allows you to view the reader/system status, CPU utilization, services, and licensed features. This information can be used by Sirit Technical Support to verify reader operation.

### System Status

This table shows the current status of the system.

Name	Value	Status	?
in_use_memory	49135616	INFO	?
modem_uptime	112401	INFO	?
reader_uptime	112429	INFO	?
free_memory	80154624	INFO	?
filesystem:/apps	4%	INFO	?
filesystem:/	58%	INFO	?
filesystem:/tmp	0%	INFO	?
tx_interlock	false	NORMAL	?
synth_locked	true	NORMAL	?
ps_fault	true	NORMAL	?
antenna_status	ok	NORMAL	?
modem_alive	true	NORMAL	?
error/warning condition	error	ABNORMAL	?

[View Error/Warning Log](#)
Clear

### CPU Utilization

This table shows the current CPU utilization for the reader.

Name	Value	?
cpu_load_user	0%	?
cpu_load_system	0%	?

Polling Period (seconds): 
Start
Stop



### Services

This table shows the current status for the services running on the reader.

Name	Status	Submit	?
discovery	Running	<input type="button" value="Stop"/>	?
sshd	Running	<input type="button" value="Stop"/>	?
ssl_cmd_evt	Stopped	<input type="button" value="Start"/>	?
ntpd	Running	<input type="button" value="Stop"/>	?
console	Running	<input type="button" value="Stop"/>	?
snmpd	Stopped	<input type="button" value="Start"/>	?
wsd	Running	<input type="button" value="Stop"/>	?
llrp	Running	<input type="button" value="Stop"/>	?
usb_console	Running	<input type="button" value="Stop"/>	?
netbt	Running	<input type="button" value="Stop"/>	?

### Licensed Features

This table shows the current license state for the given features.

Name	License State	?
Antenna Crossing Feature	License Unlimited	?
Stray Tag Elimination Feature	License Unlimited	?
Tag Phase Reporting Feature	License Unlimited	?
Secure Reader Feature	Not Licensed	?

## 6.8. Review Logs

This page allows you to view the reader logs. These logs can be used by Sirit Technical Support to verify reader operation. The reader logs include:

- **Reader level Logs** – System level reader operation
- **System Level Logs** – Linux logs
- **Firmware Update Log** – Status of last firmware update
- **Component Update Log** – status of last component firmware update
- **Rollback Log** – Previous firmware
- **Reader Applications Log** – User application logs
- **Command History Log** – Recent commands sent to the reader.
- **LLRP Component Log** – LLRP service
- 

Number	Log Type
1	<a href="#">Reader level Logs</a>
2	<a href="#">Reader level Logs (Previous)</a>
3	<a href="#">System Level Logs</a>
4	<a href="#">Firmware Update Log</a>
5	<a href="#">Component Update Log</a>
6	<a href="#">Rollback Log</a>
7	<a href="#">Reader Applications Log</a>
8	<a href="#">Command History Log</a>
9	<a href="#">LLRP Component Log</a>

## 7 Configuring Digital Inputs and Outputs

### 7.1. Digital Inputs

**Digital I/O Module**  
An optional Digital I/O Module is available for the IDentity 6204. Refer to Appendix A for more

The digital inputs (DIN1 – DIN4) can be used as general purpose inputs or to trigger the reader for tag reading. Unused or open digital inputs are floating inside the reader.

To activate the input, pull it low (0 Vdc) with an external device or connection to ground that can sink 2.5 mA. No voltage higher than +24 Vdc or lower than 0 Vdc should ever be connected to the input. See Figure 5 for an example of a typical motion sensor installed as a tag read trigger device.

### 7.2. Digital Outputs

The digital outputs (DOUT1 – DOUT4) can be used as general purpose outputs, to indicate tag reading activity, or to indicate the reader is transmitting (RF On). Digital outputs can be pulled high.

No voltage higher than +40 Vdc or lower than 0 Vdc should ever be connected to a digital output. The reader activates the output by pulling it low (0 Vdc) and can sink current such that power dissipation is  $\leq 1W$ .

### 7.3. Low Latency Digital Input/Output Operation

The IDentity 6204 is equipped with low-latency digital inputs and outputs. The inputs (3 and 4) can be used by the modem to trigger low-latency events. Two commands control these inputs as follows:

```
modem.dio.in.X.positive_level = Y -- if X goes high, it triggers Y
```

```
modem.dio.in.X.negative_level = Y -- if X goes low, it triggers Y
```

where **Y** can be:

**NOOP** (default)

**ACTIVE\_MODE**

**STANDBY\_MODE**

**TOGGLE\_MODE**

**ONE\_ROUND** (performs one inventory round, nonblock)

**RUN\_SCRIPT** (runs series of modem commands, see the following)

Any time the **RUN\_SCRIPT** operation is invoked, the reader will sequence through a maximum of 10 modem commands as follows:

```
modem.dio.in.X.script.num_cmds = Q
modem.dio.in.X.script.cmd1 = Z
modem.dio.in.X.script.cmd2 = Z
modem.dio.in.X.script.cmd3 = Z
      ⋮
modem.dio.in.X.script.cmd10 = Z
```

where:

**Q** is the number of commands. **Q** can be 0 to 10 (maximum 10 modem commands).

**Z** can be any modem command

An event **event.response.modem\_dio\_scripts dio\_in=\*, cmdnum=\*, resp=\*\*\*** is generated after each modem command.

Digital outputs 3 and 4 can be driven by modem after setting the following:

```
dio.control.X = modem
```

Actions that triggered the output can be defined by:

```
modem.dio.out.X.op = Y
```

where **Y** can be:

**NOOP** (default)

**END\_OF\_ROUND** (generates a pulse at end of each inventory round)

**ACTIVE\_MODE** (triggers high in active mode)

**SCRIPT\_RUNNING** (triggers high when digital input io triggered script is running)

**ANTENNA\_FAILURE** (triggers high in antenna failure state)

**ERROR** (generates a pulse when an error occurs)

**WARNING** (generates a pulse when an warning occurs)

All output (level/pulse) polarity is defined by:

```
modem.dio.out.X.polarity = Z
```

where **Z** can be:

**POSITIVE** (default)

**NEGATIVE**

All pulse width (in  $\mu$ Sec) is defined by:

```
modem.dio.out.X.pulse_width -(default 100  $\mu$ Sec)
```

### Example (Input)

The following example triggers a series of modem commands, when DIO input 4 goes high.

```

modem.dio.in.4.positive_level = RUN_SCRIPT
modem.dio.in.4.script.num_cmds = 3
modem.dio.in.4.script.cmd1 = "modem.antennas.perform_check()"
modem.dio.in.4.script.cmd2 = "modem.diag.current_temperature"
modem.dio.in.4.script.cmd3 = "modem.stats.tag_read"

```

### Example (Output)

In the following example, DIO output 3 will trigger low when the reader is in active mode.

```

dio.control.3 = modem
modem.dio.out.3.op = ACTIVE_MODE
modem.dio.out.3.polarity = NEGATIVE

```

## 7.4. Digital I/O Monitoring and Control Scripts

Several digital I/O monitoring and control scripts are provided with the reader to allow you to monitor the digital I/Os and take specific actions. These Python application scripts can be used as is or modified to suit your particular application. For detailed information on loading Python scripts, refer to *Chapter 5 – Embedded Reader Applications* of the **IDentity 6204 Protocol Reference Guide**.

### 7.4.1. scan\_trigger.py

This routine monitors the state of the digital input pin specified as the input parameter. If the state of the pin is low, the operating mode is set to *standby*. If the I/O pin state changes to high, the operating mode is set to *active*.

Inputs: *<pin>* – (optional) Input pin number (1–4). Default is digital in 1.

*<trigger logic level>* –(optional) 0 or 1. Default is trigger on 1.

Examples:

<code>scan_trigger.py</code>	Monitors digital input pin 1
<code>scan_trigger.py 1</code>	Monitors digital input pin 1
<code>scan_trigger.py 4</code>	Monitors digital input pin 4
<code>scan_trigger.py 3 0</code>	Monitors digital input pin 3, trigger on 0

### 7.4.2. scan\_trigger\_timer.py

This routine monitors the I/O pin. When the pin goes high, the timer is started and the operating mode is set to *active*. While the timer is running, I/O pin state changes are ignored. When the timer expires, the operating mode is set to *standby*. The minimum value for the timer is 10 milliseconds (ms).

Inputs: *<pin>* – (optional) Output pin number (1–4). Default is output 1.

*<time>* – (optional) Time, in ms for timer to run. Default is 1000 ms.

*<trigger logic level>* –(optional) 0 or 1. Default is trigger on 1.

Examples:

<code>scan_trigger_timer.py</code>	Monitors input 1, timer 1000 ms, trigger on 1
<code>scan_trigger_timer.py 2</code>	Monitors input 2, timer 1000 ms, trigger on 1
<code>scan_trigger_timer.py 4 2000</code>	Monitors input 4, timer 2000 ms, trigger on 1
<code>scan_trigger_timer.py 3 4000 0</code>	Monitors digital input 3, timer 4000 ms, trigger on 0

### 7.4.3. signal\_read.py

This routine will turn on a digital output if a tag is successfully read. The optional output pin number can be specified on the command line. If not specified, output pin 1 is used. The output pin will remain high for *n* ms, where *n* is either the default of 1000 ms, or the value supplied on the command line. Minimum value for *n* is 10 ms.

Inputs: *<pin>* – (optional) Output pin number (1–4). Default is output 1.

*<time>* – (optional) Time, in ms, to keep the output high. Default is 1000 ms (1 sec).

*<logic level>* – (optional) Logic level for digital out *On*. 0 or 1. Default is 1 (*On*).

Examples:

<code>signal_read.py</code>	Turns on output 1 for 1000 ms on tag reads
<code>signal_read.py 2</code>	Turns on output 2 for 1000 ms on tag reads
<code>signal_read.py 1 5000</code>	Turns on output 1 for 5000 ms on tag reads
<code>signal_read.py 1 500</code>	Turns on output 1 for 500 ms on tag reads
<code>signal_read.py 1 800 0</code>	Turns on digital output 1, logic level 0, for 800 ms on tag reads

#### 7.4.4. `signal_read_crc_error.py`

This routine will turn on a digital output if a tag read CRC error is detected. The output pin number can be specified on the command line. If not specified, output pin 1 is used. The output pin will remain high for *n* ms, where *n* is either the default of 1000 ms or the value supplied on the command line. Minimum value for *n* is 10 ms.

Inputs: `<pin>` – (optional) Output pin number (1–4). Default is output 1.  
`<time>` – (optional) Time, in ms, to keep the output high. Default is 1000 ms.  
`<logic level>` – (optional) Logic level for digital out *On*. 0 or 1. Default is 1 (*On*).

Examples:

<code>signal_read_crc_error.py</code>	Turns on output 1 (logic level 1=on), for 1000 ms on tag read CRC error.
<code>signal_read_crc_error.py 2</code>	Turns on output 2 (logic level 1=on), for 1000 ms on tag read CRC error.
<code>signal_read_crc_error.py 1 5000</code>	Turns on output 1 (logic level 1=on), for 5000 ms on tag read CRC error.
<code>signal_read_crc_error.py 1 500</code>	Turns on output 1 (logic level 1=on) for 500 ms on tag read CRC error.
<code>signal_read_crc_error.py 1 800 0</code>	Turns on output 1 (logic level 0=on), for 800 ms on tag CRC error.

#### 7.4.5. `rf_mon.py`

This routine will monitor the state of the transmitter. If the transmitter is on, it sets the appropriate output pin high. If low, it sets the output pin low.

Inputs: `<pin>` – (optional) Output pin number (1–4). Default is output 1.  
`<logic level>` – (optional) Logic level for digital out *On*. 0 or 1. Default is 1 (*On*).

Examples:

<code>rf_mon.py</code>	Monitors RF status, set/clear output 1 on change, logic level 0 for on
<code>rf_mon.py 1</code>	Monitors RF status, set/clear output 1 on change, logic level 0 for on
<code>rf_mon.py 2</code>	Monitors RF status, set/clear output 2 on change, logic level 0 for on
<code>rf_mon.py 3 0</code>	Monitors RF status, set/clear output 3 on change, logic level 1 for on

## 7.5. Digital Input Alarm Generation

The IDentity 6204 can be configured to generate an alarm when a digital input is disconnected or sensor failure is detected. The alarm is triggered when the signal level on the digital input stays in the specified state longer than the specified alarm timeout. This behavior can be configured independently for each digital input.

The configuration variable **dio.in.alarm.logic\_level.<N>** (where <N> is 1,2,3,4) sets whether the alarm is coupled to a input logic level of 0 (low) or 1 (high).

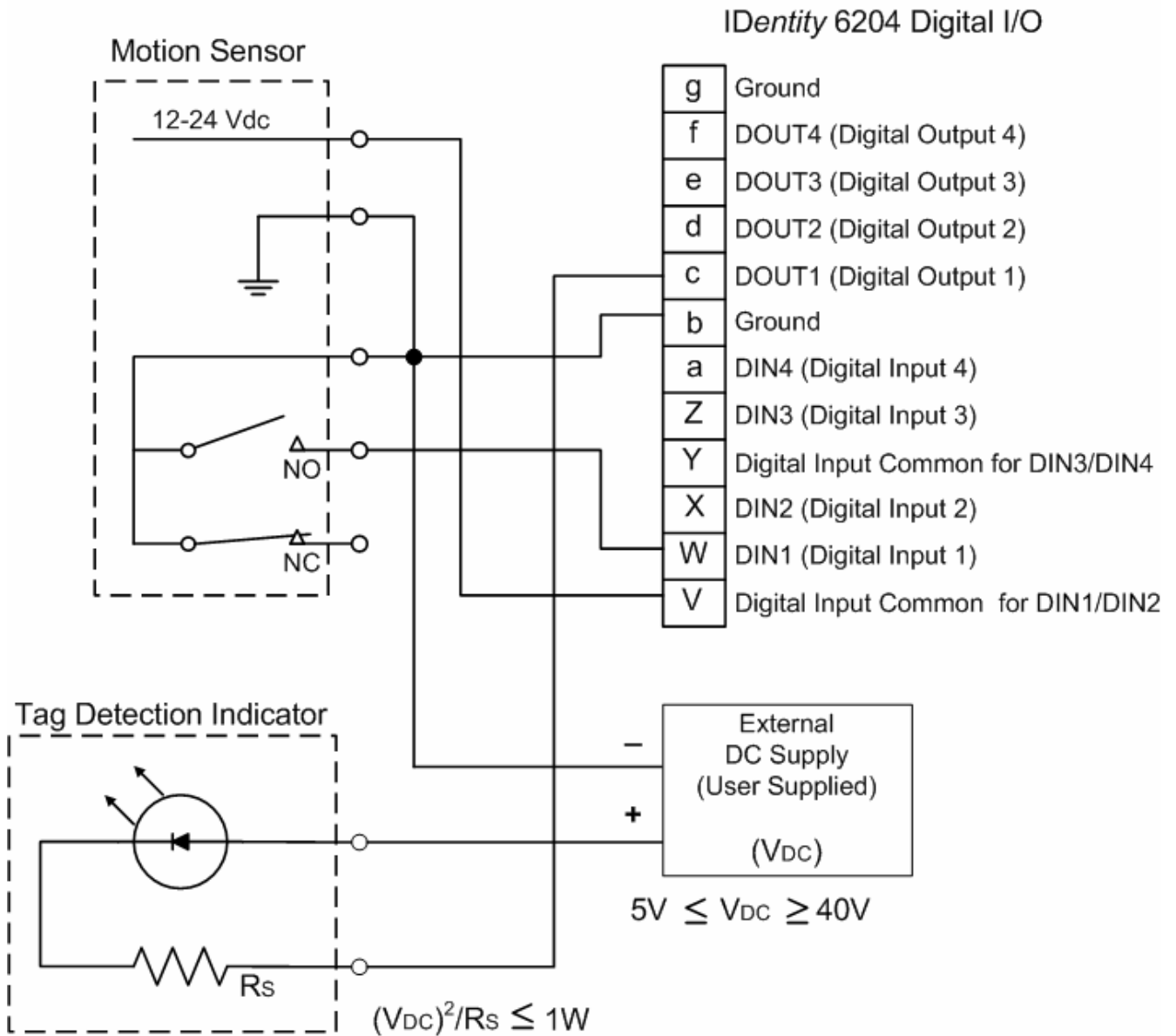
The configuration variable **dio.in.alarm.timeout.<N>** (where <N> is 1,2,3,4) sets the amount of time, in seconds, to wait for a signal state change. A value of 0 (default) disables alarm generation.

The digital input logic level is used along with the corresponding digital input pin timeout value to determine if an alarm (in the form of an event) should be generated. If a timeout value is set, the input pin is monitored. If the input pin value does not change during the timeout period AND the input pin value matches the alarm logic level, the event **event.dio.in.alarm.timeout.n** (where n is the pin number) is generated. This alarm event generation can be helpful in alerting to the loss of digital inputs to the reader.



## 7.6. Digital I/O Hardware Connection

Figure 5 shows a typical sensor/indicator connection to the digital I/Os.

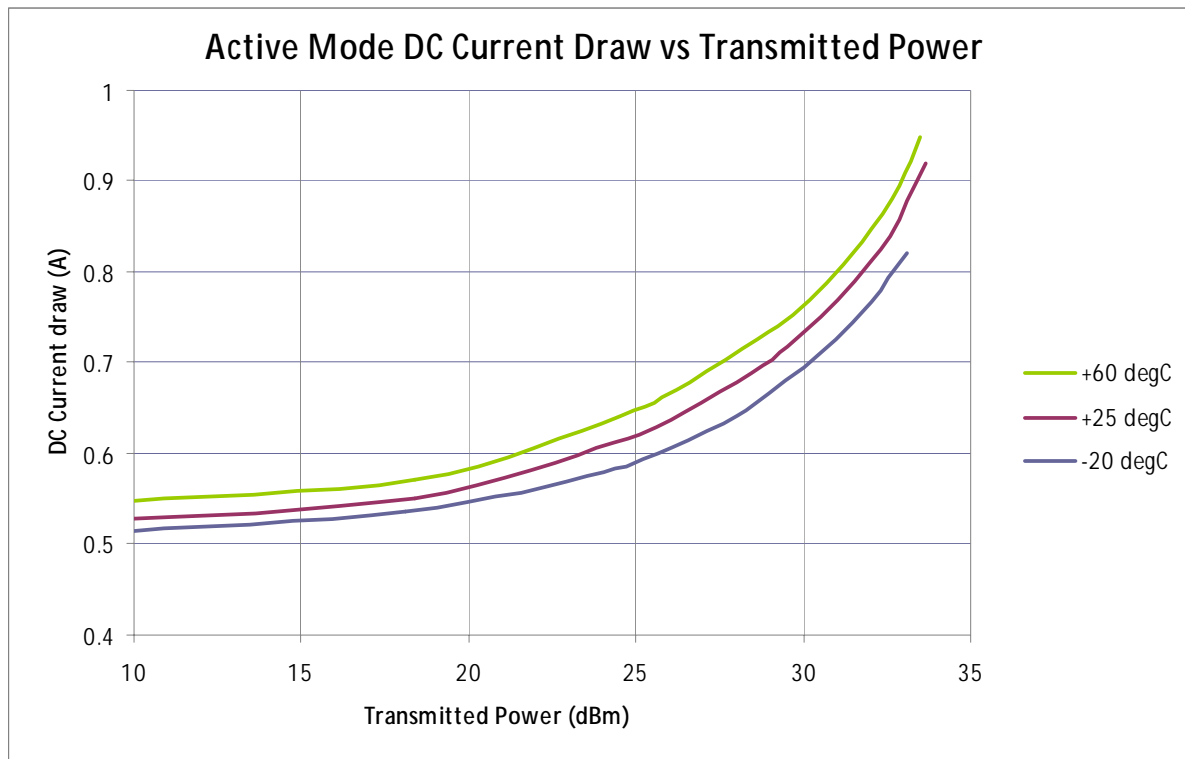


**Figure 5** Example Motion Detector and Indicator connected to the Digital I/O

## 8 Specifications

### 8.1.1. Reader Specifications

<b>Frequency</b>	902 – 928 MHz
<b>RF Power</b>	10 mW – 2W conducted (33 dBm)
<b>Power Consumption</b>	10W (typical while idle) 18W (typical at 1W conducted output power) 22W (maximum at 2W conducted output power)
<b>Connections</b>	RS-232, Digital I/O, Ethernet LAN
<b>Input Voltage</b>	24 Vdc
<b>Input Current</b>	1.5A maximum at 24 Vdc



**Figure 6** Typical Power Consumption versus Conducted Output Power at 910 MHz

**8.1.2. Environmental Specifications**

Operating Temperature	-40 °F to 131 °F (-40 °C to 55 °C)
Storage Temperature	-40 °F to 185 °F (-40 °C to 85 °C)
Maximum Shock	1 foot (0.3 meter) drop to any corner
Relative Humidity	100%, condensing
Int'l Protection Rating	IP67
Dimensions	16.5 x 12.2 x 3.4 in (419 x 310 x 86 mm)
Weight	11.0 lbs (5 kgs)

**8.1.3. AC/DC Power Adapter Specifications**

Model	Lambda DSP100-24
Input Voltage	90 - 264 Vac,
Input Frequency	47 to 63 Hz
Power	100.8 W
Holdup Time	10 ms (115 Vac)
Output Voltage	24 VDC
Output Current	4.2 A

**8.1.4. RS-232 Specifications**

Baud rate	1200 - 115200 (Default = 115200)
Parity	None
Data bits	8
Stop bits	1
Signals	Refer to Section 0 for cable pin out.

**8.1.5. Digital Input/Output Specifications**

Input	5 to 24 Vdc, 1 to 5 mA, Optically Isolated
Output	Open Collector (3 to 40 V, 100 mA Max)
Signals	Refer to Section 0 for cable pin out.

**8.1.6. Ethernet LAN Specifications**

Ethernet	10/100 BaseT
Signals	Refer to Section 0 for cable pin out.

### 8.1.7. IDentity 6204 Antenna Specifications

Please refer to the Sirit Antenna Application Guide for detailed specifications and application information for IDentity 6204 antennas.

Part Number	ANTENNA-021	ANTENNA-024
Frequency range	902–928 MHz	902–928 MHz
Antenna type	Patch	Multi-element Patch
Impedance	50 $\Omega$ , nominal	50 $\Omega$ , nominal
Gain	13 dBi	15 dBi
Beam width (-3 dB)	36°, nominal	30°, nominal
Polarization	Linear	Linear
F/B ratio	-20 dB, typical	-36 dB, typical
Side lobes level	-14 dB, typical	-18 dB, typical
Power input	37 dBm (5 W)	37 dBm (5 W)
Return loss	-12 dB, minimum	-12 dB, minimum
Connector type	N type Female (Jack)	N type Female (Jack)

**Site License –  
Customer Disclaimer**

*Customer (end user) acknowledges that a site license is required for each reader system location. It is the customer's responsibility to file for the site license and submit the appropriate filing payment. Sirit can assist with the completion of forms. United States filings require completion and submission of FCC Form 601 with Schedule D and H. Canadian filings require completion and submission of Industry Canada Forms IC2365BB and IC2430BB.*

**Licence d'Etat-client Avertissement**

*Client (utilisateur final) reconnaît que le site d'une licence est requise pour chaque lecteur emplacement du système. Il incombe au client de déposer pour la licence d'exploitation et soumettre le paiement du dépôt approprié. Sirit peut aider à la réalisation de formes. Unis dépôts États exigent l'achèvement et la soumission du formulaire FCC 601 à l'annexe D et H. dépôts canadiennes exigent l'achèvement et la soumission de Industrie Canada Formulaire IC2365BB et IC2430BB*

**Caution:**

*This equipment complies with FCC Part 90 and Industry Canada.RSS-137 rules. This device complies with FCC Part 15 and Industry Canada license exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.*

*Cet appareil est conforme à FCC Partie15 de Industrie Canada RSS standard exempts de licence (s). Son utilisation est soumise à Les deux conditions suivantes: (1) cet appareil ne peut pas provoquer d'interférences et (2) cet appareil doit accepter Toute interférence, y compris les interférences qui peuvent causer un mauvais fonctionnement du dispositif.*

*Any changes or modifications not expressly approved by Sirit could void the user's authority to operate the equipment.*

*The professional installer will need to calculate and verify the reader's power output allowable based on the antenna (gain) used and cabling (loss) effects. This value will be used in the user's submission of their site license application. The maximum antenna gain plus cable effects for a given output power can be calculated by:*

$$44.8 \text{ dBm (ERP)} - P_{out}$$

*where  $P_{out}$  is the measured RF output power (dBm)*

*Reader output power is limited to a maximum of 2W under all conditions. When operating at that power level, the maximum permissible antenna gain is 11.2dBd.*



**WARNING:** *FCC Radiation Exposure Statement. The antennas used for this transmitter must be installed to provide a separation distance of at least 1 meter from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.*

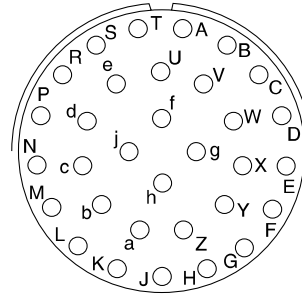
*This device complies with Health Canada's Safety Code. The installer of this device should ensure that RF radiation is not emitted in excess of the Health Canada's requirement. Information can be obtained at:*

*[http://www.hc-sc.gc.ca/ewh-semt/pubs/radiation/radio\\_guidelignes\\_direct-eng.php](http://www.hc-sc.gc.ca/ewh-semt/pubs/radiation/radio_guidelignes_direct-eng.php)*

*Cet appareil est conforme avec Santé Canada Code de sécurité 6. Le programme d'installation de cet appareil doit s'assurer que les rayonnements RF n'est pas émis au-delà de l'exigence de Santé Canada. Les informations peuvent être obtenues:*

*[http://www.hc-sc.gc.ca/ewhsemt/pubs/radiation/radio\\_guide-lignes\\_direct-eng.php](http://www.hc-sc.gc.ca/ewhsemt/pubs/radiation/radio_guide-lignes_direct-eng.php)*

### 8.1.8. Bulkhead Connector/Interface Cable Pinout



Pair	Pin	Color	Pin Name	Function
1	A	Black	Tx+	Ethernet
	B	Green	Tx-	Ethernet
2	C	Black	Rx+	Ethernet
	D	Orange	Rx-	Ethernet
3	E	Blue	VC2+	Ethernet
	F	Black	VC2-	Ethernet
4	G	Black	VC2+	Ethernet
	H	Brown	VC2-	Ethernet
5	J	Black	RS-232 TXD	Serial Port
	K	Red	RS-232 RXD	Serial Port
6	L	Black	DTR (Connected to M-DSR)	Serial Port
	M	White	RS-232 GND	Serial Port
7	N	Black	DSR (Connected to L-DTR)	Serial Port
	P	Yellow	RS-232 CTS	Serial Port
8	R	Red	RS-232 RTS	Serial Port
	S	White	No Connect	
9	T	Red	+24 VDC	Power
	U	Green	24 VDC GND	Ground
10	V	Red	DIN Ref 1	Digital Input Common
	W	Blue	DIN1	Digital Input 1
11	X	Red	DIN2	Digital Input 2
	Y	Yellow	DIN Ref 2	Digital Input Common
12	Z	Red	DIN3	Digital Input 3
	a	Brown	DIN4	Digital Input 4
13	b	Red	GND	Ground (Reader)
	c	Orange	DOUT1	Digital Output 1
14	d	Green	DOUT2	Digital Output 2
	e	White	DOUT3	Digital Output 3
15	f	Green	DOUT4	Digital Output 4
	g	Blue	GND	Ground (Reader)
16	h	Yellow	+24 VDC	H. Power
	j	Green	24 VDC GND	H. Ground

## 9 Safety Instructions

### 9.1. Power Disconnect Device

The plug on the power supply cord is intended to be the power disconnect device. As a result, the power source (socket or outlet) shall be located near the equipment and shall be easily accessible.

### 9.2. RF Safety



**WARNING:** *Part 90 Radiation Exposure Statement. The antennas used for this transmitter must be installed to provide a separation distance of at least 1 meter from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.*



**Caution:** *The IDentity 6204 UHF Reader is equipped with four (4) RF ports. To prevent reader damage, active RF ports must be properly terminated with a 50 ohm load or a functional UHF antenna before power up. UHF Readers are factory configured to operate on RF port 1. As a result, port 1 must be properly terminated before initially powering on the reader. Before activating any additional RF ports, they must also be properly terminated. Never power up the reader unless the appropriate loads or antennas are connected. Always power down the reader before removing an antenna or load from an RF port.*

### 9.3. Electrostatic Discharge



**ATTENTION** *IDentity 6204 antenna ports may be susceptible to damage from static discharge or other high voltage. Use proper Electrostatic Discharge (ESD) precautions to avoid static discharge when handling or making connections to the IDentity 6204 reader antenna or communication ports. Equipment failure can result if the antenna or communication ports are subjected to ESD.*

### 9.4. Regulatory Compliance



**Caution:** *The IDentity 6204 is designed to meet the regulatory requirements in those jurisdictions in which it is offered. Changes or modifications not expressly approved by Sirit Inc for compliance could void the user's authority to operate the equipment.*



## A Error Handling

This appendix provides a listing of errors and warnings. Where applicable, a corrective action has been provided. Errors and warnings are listed by severity (critical, major, warning) and then alphabetically. If an issue does not resolve itself after taking the recommended corrective action, contact Sirit support.

### A.1. Critical Errors

Critical errors are those errors that are likely to result in loss or severe degradation of service. These errors must be addressed immediately.

Critical Error	Event	Description	Corrective Action
MDM_ANTENNA_FAILURE	event.error.antenna	Failed to set or change antenna. Probably due to un-terminated antenna port.	Check condition of antennas, connectors, and coax. Use <b>modem.antennas.perform_check()</b> to perform antenna check function to determine if issue has been located.
MDM_CLOSED_LOOP_POWER_CTL_FAIL	event.error.radio	Internal RF power control failed. May cause inaccurate antenna power output.	Perform reader reboot. If condition persists, contact Sirit support.
MDM_OVERTEMP_FAULT	event.error.environmental	High temperature measured at modem	Determine cause of excessive reader temperature and correct.
MDM_RC_CANT_SET_FREQUENCY	event.error.radio	Synthesizer problem tuning to desired frequency.	Perform reader reboot. If condition persists, contact Sirit support.
MDM_RC_NO_ANTENNA	event.error.antenna	Failed to detect antenna. Probably due to antenna disconnected.	Check antenna connections, then perform antenna check function.
MDM_SPI_NO_RESPONSE	event.error.communication	Modem has attempted to communicate with a SPI bus peripheral and received no response.	Perform reader reboot. If condition persists, contact Sirit support.
MDM_SYNTHESIZER_LOCK_FAIL	event.error.radio	Synthesizer can't lock to desired frequency.	Perform reader reboot. If condition persists, contact Sirit support.
MDM_TEMPERATURE_SENSOR_FAIL	event.error.hw	Temperature sensor unable to detect temperature.	Perform reader reboot. If condition persists, contact Sirit support.
READER_INIT_FAILURE	event.error.sw	The main processor has failed to successfully complete the initialization process.	Perform reader reboot. If condition persists, contact Sirit support.
SEEPROM_UNABLE_TO_WRITE	event.error.hw	Unable to write to SEEPROM.	Perform reader reboot. If condition persists, contact Sirit support.

## A.2. Major Errors

Major errors are those errors that may result in loss or degradation of service. These errors must be addressed as soon as possible.

Major Error	Event	Description	Corrective Action
CHUNK_NOT_FOUND	event.error.sw	Unable to find valid data in the flash.	Perform reader reboot. If condition persists, contact Sirit support.
DATA_FORMAT_ERROR	event.error.sw	An error is detected in the data format.	Perform reader reboot. If condition persists, contact Sirit support.
DEVICE_INIT_FAILURE	event.error.sw	Error initializing a device in the system.	Perform reader reboot. If condition persists, contact Sirit support.
DEVICE_OPEN_FAILURE	event.error.sw	Unable to open device or piped command.	Check memory and disk usage via "Check Reader Status" webpage. If "free_memory" is lower then 10 MBytes or if filesystem:/apps or filesystem:/tmp is higher than 90%, determine if embedded application is improperly using memory. If condition persists, contact Sirit support.
INDEX_OUT_OF_BOUNDS	event.error.sw	Software is indexing beyond end of array.	If condition persists, contact Sirit support.
INVALID_ARGUMENT	event.error.sw	Argument of an internal command is invalid.	If condition persists, contact Sirit support.
IOP_CONMGR_INVALID_CMDRESP_FD	event.error.communication	Unknown command channel being closed.	Perform reader reboot. If condition persists, contact Sirit support.
IOP_CONMGR_INVALID_EVENT_FD	event.error.communication	Unknown event channel being closed.	Perform reader reboot. If condition persists, contact Sirit support.
IOP_HB_MODEM_NOT_RESPONDING	event.error.hw	Modem not responding to keepalives from main processor.	If condition persists, contact Sirit support.
IOP_IPRC_CRC_ERROR	event.error.communication	Communication from modem processor had a CRC error. May see at bootup, since extra bytes are sent from modem processor during its boot sequence.	Usually caused by excessive processing loading on the reader by external entities. Determine if any external process is continuously sending command requests to the reader at a high rate. If running an embedded application, ensure that it is not monopolizing the processor. If condition persists, contact Sirit support.
IOP_IPRC_TIMEOUT	event.error.communication	Communication to modem processor timed out. May see at boot up, since modem processor may take a few seconds to boot.	Perform reader reboot. If condition persists, contact Sirit support.

Major Error	Event	Description	Corrective Action
IOP_IPRC_TRY_AGAIN	event.error.com munication	No data available from the modem processor.	Perform reader reboot. If condition persists, contact Sirit support.
IOP_SPI_BAD_FILE	event.error. file_handling	Unable to open the firmware file to be written to the SPI FLASH.	Perform reader reboot. If condition persists, contact Sirit support.
IOP_SPI_BAD_VERIFY	event.error. communication	Verification of data in SPI FLASH failed.	Contact Sirit support.
IOP_SPI_INVALID_ FILE_FORMAT	event.error. file_handling	The firmware file to be written to the SPI FLASH does not appear to be in the proper hex format.	Contact Sirit support.
LICENSE_ERROR	event.error.sw	The main processor has attempted a license operation or import that has failed.	Verify license file contains MAC address of this specific unit. Verify the license file has not been imported previously. If condition persists, contact Sirit support.
MDM_ADC_DEVICE_ FAILURE	event.error.hw	The ADC device on the modem has generated an error.	If condition persists, contact Sirit support.
MDM_ANTENNA_ CHECK_FAILURE	event.error. antenna	The reader cannot perform an antenna check.	If condition persists, contact Sirit support.
MDM_CALIBRATION_ IQ_DATA_CORRUPT	event.error.hw	Invalid transmit offset calibration data found on the reader flash.	Contact Sirit support.
MDM_CALIBRATION_ IQ_DATA_MISSING	event.error.hw	Unable to find valid transmit offset calibration data from the reader flash.	Contact Sirit support.
MDM_CALIBRATION_ TX_DATA_CORRUPT	event.error.hw	Invalid transmit power calibration data found on the reader flash.	Contact Sirit support.
MDM_CALIBRATION_ TX_DATA_MISSING	event.error.hw	Unable to find valid transmit power calibration data from the reader flash.	Contact Sirit support.
MDM_CNR_CLOSED_ LOOP_FAILED	event.error.radio	CNR closed loop control failed.	If condition persists, contact Sirit support.
MDM_CNR_UPDATE_ WITH_TXOFF	event.error.sw	An error is occurred when CNR update with transmission turned off.	If condition persists, contact Sirit support.
MDM_FPGA_LOAD_ FAILURE	event.error.hw	Unable to load FPGA device on the modem.	If condition persists, contact Sirit support.
MDM_FPGA_ RAMTEST_FAILURE	event.error.hw	FPGA device on the modem failed RAM test.	If condition persists, contact Sirit support.
MDM_FPGA_RESET_ FAILURE	event.error.hw	FPGA device on the modem cannot be reset.	If condition persists, contact Sirit support.

Major Error	Event	Description	Corrective Action
MDM_FPGA_TIMEOUT_FAILURE	event.error.hw	PPI bus stopped unexpectedly	If condition persists, contact Sirit support.
MDM_FPGA_TIMEOUT_WARNING	event.error.hw	Timeout waiting on FPGA SPI bus.	If condition persists, contact Sirit support.
MDM_ICM_ERROR	event.error.communication	An inter-core message response on the modem has an error.	Contact Sirit support.
MDM_ICM_TIMEOUT	event.error.communication	An inter-core message response on the modem has timed out.	Contact Sirit support.
MDM_INVALID_RX_COMB_LENGTH	event.error.sw	Invalid receiver filter length is detected.	Contact Sirit support.
MDM_INVALID_RX_Q_CHANNEL_COEFS	event.error.sw	Invalid receiver filter coefficient is detected.	Contact Sirit support.
MDM_IPRC_CRC_ERROR	event.error.communication	Modem has received communication from main processor which fails CRC check. May see at boot up, since processors may come up (and start sending messages) at slightly different times.	Contact Sirit support.
MDM_IPRC_OVERFLOW	event.error.communication	Modem communication buffer that receives data from the main processor has overflowed and data has been lost.	Contact Sirit support.
MDM_IPRC_TRY_AGAIN	event.error.communication	Modem communication buffer that receives data from the main processor has no full message yet.	Contact Sirit support.
MDM_L1_TX_PACKET_TIMEOUT	event.error.communication	Lowest level physical layer transmit process timed out.	Contact Sirit support.
MDM_LOW_VOLTAGE_FAULT	event.error.environmental	Low voltage on digital portion of modem.	Verify correct operational voltage is being supplied to reader. Verify power supply voltages meet Sirit specifications. If condition persists, contact Sirit support.
MDM_MINIMUM_GAIN_LIMIT	event.error.sw	Receiver gain limit is exceeded.	Contact Sirit support.
MDM_PHY_ENCODER_TIMEOUT	event.error.hw	The modem transmitter has failed to complete a transmission.	If condition persists, contact Sirit support.
MDM_PPI_DEVICE_FAILURE	event.error.hw	The PPI interface has generated an error.	Contact Sirit support.

Major Error	Event	Description	Corrective Action
MDM_RESET_COMPLETE_MDM_DOWN	event.error.hw	The main processor has reset the modem, but has been unable to communicate with it.	Perform reader reboot. If condition persists, contact Sirit support.
MDM_RF_VOLTAGE_FAULT	event.error.hw	RF subsystem voltage below acceptable level. (May be seen when unit powered off.)	Verify correct operational voltage is being supplied to reader. Verify power supply voltages meet Sirit specifications. If condition persists, contact Sirit support.
MDM_RX_TRAIN_TIMEOUT	event.error.sw	The modem has exceeded the receiver training time limit.	If condition persists, contact Sirit support.
MDM_UNKNOWN_PROTOCOL	event.error.sw	The modem detected an unsupported protocol.	If condition persists, contact Sirit support.
MDM_UNKNOWN_TX_INTERP_RATE	event.error.sw	The modem detected an unsupported transmit interpolation rate.	Contact Sirit support.
MDM_UNKNOWN_TX_TEST_MODE	event.error.sw	The modem detected an unsupported transmit test mode.	Contact Sirit support.
MDM_UNKNOWN_TX_WAVEFORM_TYPE	event.error.sw	The modem detected an unsupported transmit waveform.	Contact Sirit support.
SPARSE_ARRAY_BOUNDS_CHECK	event.error.sw	Software attempted to index beyond the limits of the sparse array.	Contact Sirit support.
SYSLOG_INVALID_LOG_LEVEL	event.error.sw	Invalid level specified in C2 command for remote syslog.	Verify the correct logging level of syslog messages sent to the specified remote syslog file server. If condition persists, contact Sirit support.
MDM_SYNC_NO_SIGNAL_DETECTED	event.error.hw	Unable to detect synchronization signal.	Verify synchronization cables are appropriately connected and a device (GPS or other reader) exists which is generating a sync signal.

### A.3. Warnings

Warnings indicate that the system has detected an abnormality. Although no action is required, the system should be monitored for further issues.

Warnings	Event	Description	Corrective Action
HEATER_ACTIVE_OVERTEMP	event.warning.hw	The measured temperature is higher than the maximum temperature when the heater is active.	None required.
IOP_CONFIG_FILE_CORRUPT	event.warning.file_handling	During the loading of a profile or auxiliary configuration file, a file has been determined to be corrupt.	None required.
IOP_EVENT_INVALID_FORMAT	event.warning.communication	Indicates an event with invalid format being sent to the main processing system.	None required.
IOP_FILE_TRANSFER_ERROR	event.warning.file_handling	An attempt to move files in the main processing system has failed.	None required.
IOP_SOCKET_CREATE_FAILURE	event.warning.communication	Indicates a failure to connect to the modem.	None required.
IOP_SPI_NO_ANSWER	event.warning.communication	Indicates a failure to connect to the SPI bus.	None required.
IOP_TMR_NO_MORE_TIMERS	event.warning.sw	Indicates a failure to find valid timers.	None required.
KERNEL_FN_FAILURE	event.warning.sw	Indicates a failure in accessing the kernel drivers.	None required.
LICENSE_EXPIRED	event.warning.license	A temporary license has expired. The licensed feature has been disabled.	None required.
LICENSE_EXPIRING	event.warning.license	A temporary license is near expiration. The licensed feature is still enabled.	None required.
LICENSE_WARNING	event.warning.license	A minor problem occurred during a license import.	None required.
MALLOC_FAIL	event.warning.sw	Indicates a failure in allocating memory.	None required.
MDM_ALL_CHANNELS_BUSY	event.warning.radio	The modem is unable to find valid channels.	None required.
MDM_CALIBRATION_RSSI_DATA_CORRUPT	event.warning.hw	Invalid RSSI calibration data found on the reader flash.	None required.
MDM_CALIBRATION_RSSI_DATA_MISSING	event.warning.hw	Unable to find valid RSSI (Return Signal Strength Indicator) calibration data from the reader flash.	None required.
MDM_LBT_CHANNEL_IS_OCCUPIED	event.warning.radio	The selected channel is occupied.	None required.
MDM_NO_AVAILABLE_FREQUENCIES	event.warning.radio	There are no frequencies available for transmission which meet the LBT and/or minimum-off-time requirements.	None required.

Warnings	Event	Description	Corrective Action
MDM_OVER_TEMP	event.warning.hw	The measured temperature is higher than the warning threshold, but not high enough to cross fault threshold.	None required.
MDM_POWERMEASURE_CLIPPED	event.warning.radio	An error is detected in the power reading process.	None required.
MDM_PREDISTORTION_DATA_MISSING	event.warning.hw	Unable to find valid predistortion calibration data from the reader flash.	None required.
MDM_RC_NO_AVAILABLE_FREQUENCIES	event.warning.radio	The modem is unable to find valid frequencies.	None required.
MDM_REFLECTED_POWER	event.warning.antenna	An antenna's return loss is lower than the warning threshold, but not low enough to cross the fault threshold.	None required.
MODULE_NOT_INITIALIZED	event.warning.sw	Indicates a failure in module initialization.	None required.
NULL_POINTER	event.warning.sw	Indicates a failure in the pointer.	None required.
READER_RESET_FP_SWITCH_FACTORY_SET_ERROR	event.warning.sw	Error detected during reset of profile to factory default when pressing the hardware reset switch.	None required.
READER_RESET_FP_SWITCH_NETWORK_SET_ERROR	event.warning.sw	Error detected during reset of network to factory setting when pressing the hardware reset switch.	None required.
READER_RESET_FP_SWITCH_SERIAL_CONSOLE_SET_ERROR	event.warning.sw	Error detected during reset of serial interface to CLI when pressing the hardware reset switch.	None required.
READER_RESET_FP_SWITCH_SERIAL_RAWMODE_SET_ERROR	event.warning.sw	Error detected during reset of serial interface raw mode to FALSE when pressing the hardware reset switch.	None required.
READER_RESET_FP_SWITCH_SERIAL_SET_ERROR	event.warning.sw	Error detected during reset of serial interface parameters when pressing the hardware reset switch.	None required.
SPARSE_ARRAY_NULL	event.warning.sw	Indicates a non-existent sparse array.	None required.
SYMBOL_TABLE_DEFAULT_INVALID	event.warning.sw	Default value is invalid for the symbol.	None required.
SYMBOL_TABLE_FAILED_TO_RESTORE	event.warning.configuration	Indicates a failure in restoring the configurations.	None required.
SYMBOL_TABLE_FAILED_TO_SAVE	event.warning.configuration	Indicates a failure to save the configurations.	None required.

Warnings	Event	Description	Corrective Action
SYMBOL_TABLE_OVER_REGISTRATION	event.warning.sw	Indicates duplicated registrations of the symbol.	None required.
SYMBOL_TABLE_WRONG_TYPE	event.warning.sw	Data type is invalid for the symbol.	None required.

## A.4. Informational Messages

Informational messages describe various system events.

Message	Event	Description
AUX_PROCESS_FAILURE	event.info	The main processor has detected an error in an auxiliary process.
HEATER_STATUS_ACTIVE	event.info	The heater is in active state.
IOP_EVENTS_DROPPED	event.info	The main processor has detected events being dropped.
IOP_TAG_DB_OVERFLOW	event.info	The main processor has detected an overflow in the tag database.
IOP_TMR_NO_EVENTS_PENDING	event.info	Indicates a timer signaled attention, but there were no timer events pending.
IOP_TMR_NOT_ACTIVE	event.info	Indicates a timer operation is being performed on an expired timer.
ITEM_NOT_FOUND	event.info	Indicates a search failure.
MDM_RESET_COMPLETE	event.info	Modem reset is complete.
MDM_SET_TXDAC_WHILE_IDLECW_ON	event.info	Indicates setting transmission DAC values while IDLE cw is active.
MDM_TEMP_RESUME	event.info	Indicates temperature reaching resume value.
NO_AVAILABLE_CONNECTIONS	event.info	Indicates the maximum number of command/response or event channels have been exceeded.
OUT_OF_MEMORY	event.info	Indicates the maximum number of events allowed for registration has been reached.
READER_ENTER_DUTY_CYCLE	event.info	Indicates the reader entering the duty cycle.
READER_INIT_SUCCESS	event.info	Indicates the reader successfully initialized.
READER_RECOVERY	event.info	Indicates the reader recovery being performed.



Message	Event	Description
READER_RESET_BY_FP_SWIT CH	event.info	Indicates the reader being reset by hardware reset

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