



# **Installation and Operations**

## **Manual**

### **RS-232 & RS-485 Smart Antennas**

**Models 51xx-SA 125 KHz**

**Models 51xx-SR 148 KHz**



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## Product Description

### Smart Antennas (Readers/Writers)

This manual provides information pertaining to the installation and operation of the Models 51xx-SA (125 KHz) and 51xx-SR (148 KHz) RS-232 & RS485 series of Smart Antennas, (LF) RFID Reader products under the part numbers found on page 4.

The Model 51xx-SA/SR series of Smart Antennas combine both the Reader/Writer and Antenna components into a single package operating as a stand alone RS-232/485 solution with the exception of the Model 5130-SA/SR series which necessitates an external Antenna.



The Smart Antennas operate both as a transmitter and receiver. They provide a low frequency electromagnetic field at 125 KHz or 148 KHz to energize and activate an electronic transponder (RFID Tag). Once the Tag is energized it modulates its data back to the Smart Antenna which in turn detects and demodulates this data for delivery to the serial port.

The Smart Antennas have three operating modes, Single Tag Report Mode meaning a Tag will be read and reported once and Duplicate Tag Report Mode meaning a Tag will be continually read and reported, and Polling Tag Report Mode whereby a Tag will only be reported if the Smart Antenna is queried AND if a Tag is present. The Smart Antennas are easy to use and install. Their sturdy construction, industrial cabling options, and strong mounting make them ideal for rugged environments

## Tags

RFID Transponders (Tags) used in conjunction with these Smart Antennas are passive devices with no finite life for read only operations and a finite life of 100k writes, containing a EEPROM with encoded data. The amount of time to read a Tag and write the memory will vary depending on the amount of memory.

| Memory                 |  | Reading        |  | Writing          |
|------------------------|--|----------------|--|------------------|
| 8 characters<br>ASCII  |  | 12.5ms to 25ms |  | 430ms to 450ms   |
| 16 characters<br>ASCII |  | 25ms to 50ms   |  | 660ms to 700ms   |
| 32 characters<br>ASCII |  | 50ms to 100ms  |  | 1320ms to 1400ms |

## Product Part Numbers & Accessories

| Part Number   | Description   |
|---------------|---|
|               | Note: SA=125 KHz RS232 SR=148 KHz RS232 Add -485 to any model for RS485                     |
| 719-0013-25SA | Model 5100-SA Yellow Prox, pigtail wiring for serial & power, 24vdc, 8 or 16 characters     |
| 719-0013-26SA | Model 5100-SA Yellow Prox, pigtail wiring serial, power jack, 24vdc, 8 or 16 characters     |
| 719-0013-27SA | Model 5100-SA Yellow Prox, 9 PIN serial conn, power pigtail wiring, 24vdc, 8/16 characters  |
| 719-0013-28SA | Model 5100-SA Yellow Prox, 9 PIN serial connector, power jack, 24vdc, 8 or 16 characters    |
| 719-0015-25SA | Model 5110-SA Hockey Puck, pigtail wiring for serial & power, 24vdc, 8 or 16 characters     |
| 719-0015-26SA | Model 5110-SA Hockey Puck, pigtail wiring serial, power jack, 24vdc, 8 or 16 characters     |
| 719-0015-27SA | Model 5110-SA Hockey Puck, 9 PIN serial conn, power pigtail wiring, 24vdc, 8/16 characters  |
| 719-0015-28SA | Model 5110-SA Hockey Puck, 9 PIN serial connector, power jack, 24vdc, 8 or 16 characters    |
| 719-0016-25SA | Model 5120-SA 13" Tubular PVC, pigtail wiring for serial & power, 24vdc, 8 or 16 characters |
| 719-0016-26SA | Model 5120-SA 13" Tubular PVC, pigtail wiring serial, power jack, 24vdc, 8 or 16 characters |



|               |  |
|---------------|--|
| 719-0016-27SA | Model 5120-SA 13" Tubular PVC, 9 PIN serial conn, pwr pigtail wiring, 24vdc, 8/16 char         |
| 719-0016-28SA | Model 5120-SA 13" Tubular PVC, 9 PIN serial connector, power jack, 24vdc, 8/16 characters      |
| 719-0026-25SA | Model 5150-SA 7" sq., pigtail wiring for serial & power, 24vdc, 8 or 16 characters             |
| 719-0026-26SA | Model 5150-SA 7" sq., pigtail wiring serial, power jack, 24vdc, 8 or 16 characters             |
| 719-0026-27SA | Model 5150-SA 7" sq., 9 PIN serial connector, power pigtail wiring, 24vdc, 8 or 16 characters  |
| 719-0026-28SA | Model 5150-SA 7" sq., 9 PIN serial connector, power jack, 24vdc, 8 or 16 characters            |
| 719-0027-25SA | Model 5160-SA 12" sq., pigtail wiring for serial & power, 24vdc, 8 or 16 characters            |
| 719-0027-26SA | Model 5160-SA 12" sq. FlatPack, pigtail wiring serial, power jack, 24vdc, 8 or 16 characters   |
| 719-0027-27SA | Model 5160-SA 12" sq., 9 PIN serial connector, power pigtail wiring, 24vdc, 8/16 characters    |
| 719-0027-28SA | Model 5160-SA 12" sq., 9 PIN serial connector, power jack, 24vdc, 8 or 16 characters           |
| 719-0098-25SA | Model 5180-SA Slim Line, pigtail wiring for serial & power, 24vdc, 8 or 16 characters          |
| 719-0098-26SA | Model 5180-SA Slim Line, pigtail wiring serial, power jack, 24vdc, 8 or 16 characters          |
| 719-0098-27SA | Model 5180-SA Slim Line, 9 PIN serial conn, power pigtail wiring, 24vdc, 8/16 characters       |
| 719-0098-28SA | Model 5180-SA Slim Line, 9 PIN serial connector, power jack, 24vdc, 8 or 16 characters         |
| 719-0104-25SA | Model 5131-SA Nano Reader, pigtail wiring for serial & pwr, 24vdc, 8 or 16 characters          |
| 719-0104-26SA | Model 5131-SA Nano Reader, pigtails serial & pwr jack, 24vdc, 8 or 16 characters               |
| 719-0104-27SA | Model 5131-SA Nano Reader, 9 PIN serial conn, power pigtails, 24vdc, 8/16 characters           |
| 719-0104-28SA | Model 5131-SA Nano Reader, 9 PIN serial conn, power jack, 24vdc, 8/16 characters               |
| 719-0104-29SA | Model 5131-SA Nano Reader, M12 connector for serial & power, 24vdc, 8/16 characters            |
| 719-0243-25SA | Model 5130-SA w/optional ext Ant, pigtail wiring for serial & pwr, 24vdc, 8 or 16 characters   |
| 719-0243-26SA | Model 5130-SA w/optional ext Ant, pigtails serial & pwr jack, 24vdc, 8 or 16 characters        |
| 719-0243-27SA | Model 5130-SA w/optional ext Ant, 9 PIN serial conn, power pigtails, 24vdc, 8/16 characters    |
| 719-0243-28SA | Model 5130-SA w/optional ext Ant, 9 PIN serial conn, power jack, 24vdc, 8/16 characters        |
| 719-0243-29SA | Model 5130-SA w/optional ext Ant, M12 connector for serial & power, 24vdc, 8/16 characters     |
| 719-0246-25SA | Model 5155-SA Flatpack, pigtail wiring for serial & pwr, 24vdc, 8 or 16 characters             |
| 719-0246-26SA | Model 5155-SA Flatpack, pigtails serial & pwr jack, 24vdc, 8 or 16 characters                  |
| 719-0246-27SA | Model 5155-SA Flatpack, 9 PIN serial conn, power pigtails, 24vdc, 8/16 characters              |
| 719-0246-28SA | Model 5155-SA Flatpack, 9 PIN serial conn, power jack, 24vdc, 8/16 characters                  |
| 719-xx08-25SA | SmartRoller xx=inches, pigtail wiring for serial & power, 24vdc, 8 or 16 characters            |
| 719-xx08-26SA | SmartRoller xx=inches, pigtail wiring serial, power jack, 24vdc, 8 or 16 characters            |
| 719-xx08-27SA | SmartRoller xx=inches, 9 PIN serial connector, power pigtail wiring, 24vdc, 8 or 16 characters |
| 719-xx08-28SA | SmartRoller xx=inches, 9 PIN serial connector, power jack, 24vdc, 8 or 16 characters           |
| 720-0008-10   | Regulated 24vdc AC adaptable power supply w/mating jack plug, 24vdc, 1amp, 10' cabling         |
| 720-0008-11   | Regulated 24vdc AC adaptable power supply w/pigtail wiring, 24vdc, 1amp, 10' cabling           |

## Specifications

|                           |  |  |                                       |
|---------------------------|--|--|---------------------------------------|
| Protocol:                 | Serial RS-232 or RS485                             |  |                                       |
| Baud rate:                | 9600 or 19200 bps                                  |  |                                       |
| Data Bits:                | 8  |  |                                       |
| Parity:                   | None   |  |                                       |
| Stop Bits:                | 1  |  |                                       |
| Flow Control:             | None   |  |                                       |
| Data Storage:             | None   |  |                                       |
| Error Rate:               | Less than 1 in 10 to the 14 <sup>th</sup> readings |  |                                       |
| Serial Connectors:        | 9 pin D-SUB Female                                 | Twisted pair pigtails                    |                                       |
| Power Connectors:         | Quick Connect Single Male Pole                     | Twisted pair pigtails                    |                                       |
| Cabling distance:         | 50'  |  |                                       |
| 5vdc Power Requirements:  | Vdc Min = 4.8v<br>Current Min = 125mA              | Vdc Typical = 5v<br>Current Typ = 150mA  | Vdc Max = 5.2v<br>Current Max = 200mA |
| 24vdc Power Requirements: | Vdc Min = 7v<br>Current Min = 125mA                | Vdc Typical = 24V<br>Current Typ = 150mA | Vdc Max = 28v<br>Current Max = 200mA  |
| Temperature range:        | Operating 0C to 70C                                |  | Non-Operating -20C to 125C            |

## Quick Start Installation Guide

### Reading Tags

Simply power the Smart Antenna and an LED will illuminate. Solid illumination indicates power is applied and the Smart Antenna is ready for operation. Assuming a Tag is programmed with data, present the Tag to the Smart Antenna and the LED will blink from on to off indicating the Tag has been successfully read. Congratulations, you have just performed a Tag read. The Smart Antenna is defaulted to the Single Read Mode, therefore only 1 read will occur per Tag presented, with a 2.5 second timeout before the same Tag can be read again assuming the Tag leaves the Smart Antenna's RF field for that 2.5 second timeout period. Any subsequent Tag will be read immediately.

**Preparing to interface the Smart Antenna to your PC** - There two options available to you for achieving Tag data to your PC screen.

1) Install the Windows based Demo Software from the CD-ROM if provided to you (open the CD, open the Terminal Programs folder then RFID, Inc. Terminal Program folder, run Setup and follow the prompts), execute that Windows based program. **The very first step you must perform**, to the right of the window in the program find the box marked "Open" and click on it, which should then



turn to “Close”. You are opening up your COM port for communication. Plug the Smart Antenna’s serial cable into your PC’s serial port and power the Smart Antenna. In the area defined “Reader Type”, select “Change” and from the pull down menu choose any Reader with the number of characters you intend to operate at, 8, 16 or 32. The “Connected” indicator square should turn from red to green. If not, it will do so when selecting S for single report reading mode, or D for duplicate report reading mode. You are now ready to read and write Tags through your PC. If your PC does not have a serial port, use a serial to USB converter cable.

2) There is a HyperTerminal file on the CD ROM defaulted to the Smart Antenna’s communication settings of 9600, 8, N, 1, except for the COM port address. Since we do not know your COM port, we cannot predefine this for you. Execute this file so HyperTerminal can open in a window on your PC. All Windows based software versions have HyperTerminal except for Windows 7 and Vista. You will need to find and purchase a copy on the internet or call RFID, Inc. technical support to be talked through the process. You can execute the link directly from the CD ROM, or by copying the link to your own file folder and executing from there. If you will be frequently using HyperTerminal you can also place this link on your desktop as a shortcut. Upon powering the Smart Antenna you should see a start up message displayed to your screen, this indicates the Smart Antenna has performed a self test and is ready to be operated and is properly connected. If you do not see this start up message, you do not have the COM port properly defined. You are now ready to read Tags and have them reported to your PC. If you would like to issue the single or duplicate read mode commands through HyperTerminal, you can do so by typing [S] or [D], open square bracket, capital letter, closed square bracket (or carriage return).

### Writing Tags

Larger Tags may require some spacing from the Smart Antenna to program. Unspecified characters will be filled with zeros when programming. To program a Tag, you must select the appropriate Writing Mode and there are two, modes 08 and 18 depending upon the type of Tag you are using. Most all Tags are mode 18 Tags. Flat Tags with a planar coil such as credit card style, keyfobs, coin style or any diameter Tag will be Mode 18. Ferrite based Tags (glass ampoules, lipstick, some bar Tags) will be Mode 08. Following is a list of mode 08 Tags. If you do not see your Tag in this list, then you have a mode 18 Tag.

| Part Number | Description       |
|-------------|-------------------|
| 800-0084-01 | Coffin Tag        |
| 800-0073-xx | Glass Ampoule Tag |
| 800-0015-02 | Bar Tag           |
| 800-0015-05 | Bar Tag           |
| 800-0017-xx | Lipstick Tag      |
| 800-0021-xx | Deck of Cards Tag |

Using RFID, Inc.’s Terminal Program/Demo Software, you can change the mode by selecting the M8 button which will cycle through the modes in order (you may be more modes than the two listed in this document). Select the V button to determine which mode the Smart Antenna is in. Select P for prepare to write, type in the data you wish to have written, ensure the Tag is within the Smart Antenna’s proximity, then select W for write.

Using HyperTerminal, you can issue the version command [V] and the Smart Antenna will respond with its current mode. You can issue the mode command by simply entering [M18] for example to take the Smart Antenna directly to mode 18. To then write to a Tag, simply enter [Wdata].

## Setting up and getting to know the Smart Antenna

This section contains information for configuring the Smart Antenna's power and signal cabling as well as information about the start up message and Tag data.

### Wire Specifications

Shielded (22 AWG for communication cable length up to 25' and 16 AWG for communication lengths beyond 25') insulated, stranded wire is recommended and all wires should be stripped approximately 3/8 inches and tinned. Whatever cable is selected, it should fit within the range allowed by the cable gland providing wire access to the Smart Antenna. The cable gland will accommodate diameters of .090 to .265 inches.

### Power Connections

Regulated power supplies are preferred, linear power supplies are acceptable, switching power supplies should never be used as they affect the Smart Antenna's read range performance. Take care that while some supplies are labeled as regulated, they are actually switching. Contact the source of your supply or contact RFID, Inc. technical support with the make and model number of your supply. Refer to the specification on page 6 for more information on power. RFID, Inc. can provide a power supply suitable for use with the Smart Antenna. The Smart Antenna should be operated from a grounded supply that has the same ground reference as the host computer.

Pigtails – You will see a set of 2 wires, white and black. White is +voltage and black is ground.

Quick connect power jack – If you ordered the Smart Antenna with this option then you probably also ordered the mating AC adaptable power supply.

### RS232 Connections

| PIN# | SIGNAL NAME           | Wire Color |
|------|-----------------------|------------|
| 2    | TD - Transmitted Data | WhiteBlack |
| 3    | RD - Received Data    | Red        |
| 5    | GND - Signal Ground   | White      |

9 pin D-SUB Female – The connections have pre-wired to act as a null modem with pins 2 and 3 being crossed. No null modem cable is necessary.





## RS485 Connections

This version of the Reader is half duplex with a single cable using the following color codes:

### Power:

White = +24VDC  
Green = 0VDC/Ground

### RS485:

RED = +TD  
BLACK = -TD

Circuit Ground = Bare/Drain.

## Start Up Message

Upon powering and re-powering a Smart Antenna, a start up message is sent to the serial port. This message can be turned on and off via the commands list on page 12.

Power up message without addressing enabled:

```
<LF><LF>RFID Inc<CR>  
<LF>vx.xx(####)-RW081632<CR><CR>
```

Power up message with addressing enabled:

```
<LF>aaa<CR>  
<LF><LF>RFID Inc<CR>  
<LF>vx.xx(####)-RW081632<CR><CR>
```

Where: <LF> = Line Feed  
<CR> = Carriage Return  
aaa = Smart Antenna address  
vx.xx = firmware version  
(####) = firmware part number

## Tag Data

There are 3 sets of Tag data options available:

8 characters hex (0-9 + A-F)  
16 characters ASCII  
32 characters ASCII

8 character Tags are limited to hex characters. Below is a table with the available character set for use on the 16 or 32 character transponders showing the ASCII character and its hexadecimal value.

|       |      |      |      |
|-------|------|------|------|
| @ 40  | 0 30 | A 41 | P 50 |
| ! 21  | 1 31 | B 42 | Q 51 |
| “ 22  | 2 32 | C 43 | R 52 |
| # 23  | 3 33 | D 44 | S 53 |
| \$ 24 | 4 34 | E 45 | T 54 |
| % 25  | 5 35 | F 46 | U 55 |
| & 26  | 6 36 | G 47 | V 56 |
| ‘ 27  | 7 37 | G 48 | W 57 |
| ( 28  | 8 38 | I 49 | X 58 |
| ) 29  | 9 39 | J 4A | Y 59 |
| * 2A  | : 3A | K 4B | Z 5A |
| + 2B  | ; 3B | L 4C | [ 5B |
| , 2C  | < 3C | M 4D | \ 5C |
| - 2D  | = 3D | N 4E | ] 5D |
| . 2E  | > 3E | O 4F | ^ 5E |
| / 2F  | ? 3F |      |      |

Tag data will be sent to the serial port in the following format (8 character Tag example).

**<LF>XXXXXXXX<CR>**

Where: <LF> = Line Feed  
 XXXXXXXX = Tag data  
 <CR> = Carriage Return

## Operating the Smart Antenna

This section explains operational information for the Smart Antennas, commands, operating modes, and responses. Smart Antennas have 2 main functions, the first and most important function being to read and write data with transponders followed by communicating that data via a serial connection.

## Commands and Responses

### Note:

- All commands are issued in ASCII CAPITAL letters, and they are preceded by an open square bracket and ended with a closed square bracket. Some symbols and all numbers are permitted. No spaces are permitted.
- Commands are held in non-volatile memory, meaning that if power is taken away from the Smart Antenna the last command or settings will be retained when re-powered.
- The below examples of Smart Antenna commands and responses assume the Smart Antenna has not had an address set unless specifically noted.

### [X] – Baud Rate Selection Command

These 2 commands allow you to select baud rate of 9600 or 19200 bps. The Smart Antenna is defaulted to 9600.

Host: [X19] or [X96]



Where: **X19** = 19200 command or **X96** = 9600

Smart Antenna Response: There is no response

### [S] - Single Tag Read Mode

This command sets the Smart Antenna to read and output Tag data once. This mode has a buffered memory of 2.5 seconds, meaning that a Tag must be removed from the RF field for that amount of time before that same Tag can be re-read and re-reported. A different Tag will be immediately reported.

Host: [S]

Where: **S** = command

Smart Antenna Response: <LF>**OK**<CR>

Where: <LF> = Line Feed

**OK** = Response

<CR> = Carriage Return

### [D] - Duplicate Tag Read Mode

This command sets the Smart Antenna to read and report a Tag's data continually.

Host: [D]

Where: **D** = command

Smart Antenna Response: <LF>**OK**<CR>

Where: <LF> = Line Feed

**OK** = Response

<CR> = Carriage Return

### [P] - Polling Tag Read Mode

This command sets the Smart Antenna in a mode to read a Tag only when queried.

Host: [P]

Where: **P** = command

Smart Antenna Response: <LF>**OK**<CR>

Where: <LF> = Line Feed

**OK** = Response

<CR> = Carriage Return

### [T] - Polling Request

This command issues a request to the Smart Antenna to report any Tag that is currently present to the Smart Antenna. If a Tag has passed by the Smart Antenna, the Tag data will not have been retained.

Host: [T]

Where: **T** = command

Smart Antenna Response: <LF>**Tag Data**<CR>

Where: <LF> = Line Feed

**Tag Data** = Response

<CR> = Carriage Return

or



Smart Antenna Response: <LF>e<CR>  
Where: <LF> = Line Feed  
e = Response indicating no Tag is present  
<CR> = Carriage Return

### [Txx] – Polling Request with expiration

This command can only be used while in the Single or Duplicate report modes. It is a polling request with an expiration timeout that can be set from 01 to 99, each single digit increment representing 65.5ms of time. For example, 04 would equal 262ms. This command is used if you would like to know if a Tag shows up, or maybe more importantly does not show up, within a specified amount of time.

Host: [Txx]  
Where: T = command  
xx = increments of time in 65.5ms per value of 1

Smart Antenna Response if Tag comes present within xx time: <LF>Tag Data<CR>  
Where: <LF> = Line Feed  
Tag Data = Response  
<CR> = Carriage Return

or

Smart Antenna Response if Tag does not come present within xx time: <LF>NO TAG<CR>  
Where: <LF> = Line Feed  
NO TAG = Response indicating no Tag is present  
<CR> = Carriage Return

### [MO] – Startup Message Off Command

This command allows you to turn off the start up message sent by the Smart Antenna each time the unit is powered on. The Smart Antenna is defaulted with this message on.

Host: [MO]  
Where: MO = message off command

Smart Antenna Response: <LF>OK<CR>  
Where: <LF> = Line Feed  
OK = Response  
<CR> = Carriage Return

### [MN] – Startup Message Enabled Command

This command allows you to turn on the power up message sent by the Smart Antenna each time the unit is powered on.

Host: [MN]  
Where: MN = message enabled command

Smart Antenna Response: <LF>OK<CR>  
Where: <LF> = Line Feed  
OK = Response  
<CR> = Carriage Return

## [Bxx] – Number of Tag Characters

This command allows you to select 8, 16, or 32 Tag characters.

Host: [Bxx]

Where: **B** = command  
**xx** = number of Tag characters (08, 16, or 32)

Smart Antenna Response: <LF>OK<CR>

Where: <LF> = Line Feed  
**OK** = Response  
<CR> = Carriage Return

**Note:** If you have programmed a Tag with 8 characters and then change the Smart Antenna to the 16 character mode, that Tag must be reprogrammed with 16 characters before it can be read.

## [W] – Write Tag Data

This command allows you to reprogram a Tag assuming that Tag is present to the Smart Antenna.

Host: [Wxxxxxxxx]

Where: **W** = command  
**xx** = tag data

Note: If the number of characters entered is less than the allowable Tag memory, remaining characters will be filled with zeros padded to the right. If the number of characters entered is more than the allowable Tag memory, characters to the right will be truncated.

Smart Antenna Response: <LF>PROGRAMMED<CR>

Where: <LF> = Line Feed  
**Programmed** = Response  
<CR> = Carriage Return

Immediately Followed By the Tag data:

Smart Antenna Response: <LF>XXXXXXXX<CR>

Where: <LF> = Line Feed  
**XXXXXXXXXX** = Tag Data  
<CR> = Carriage Return

## [Mxx] – Set Writing Mode

This command places the Smart Antenna into one of two Writing Modes dependent upon the type of Tag you are attempting to program. Those two modes are 08 or 18. Most all Tags are mode 18 and this is the factory default mode. See the section “Writing Tags” on page 7 for a list of Tags that fall under the 08 mode category.

Host: [Mxx]

Where: **M** = command  
**xx** = 08 or 18

Smart Antenna Response: <LF>OK<CR>

Where: <LF> = Line Feed  
**OK** = Response

<CR> = Carriage Return

## [V] - View Writing Mode Command

This command allows you to see what Writing Mode the Smart Antenna is currently in, 08 or 18.

Host: [V]

Where: V = command

Smart Antenna Response: <LF>08<CR>

or

Smart Antenna Response: <LF>18<CR>

Where: <LF> = Line Feed

08 = writing mode

18 = writing mode

<CR> = Carriage Return

## [I] - Firmware Version Command and Self Test Mode

This command allows you to view the Smart Antenna's version of firmware and initiates an internal self test. Response of the firmware version indicates the Smart Antenna's self test was successful. Potted Smart Antennas cannot be upgraded with the latest version of firmware.

Host: [I]

Where: I = command

Smart Antenna Response: <LF>Version 1.08<CR> (example)

Where: <LF> = Line Feed

Version 1.08 = firmware version

<CR> = Carriage Return

## Addressing

The following commands are only for Smart Antennas with firmware version 1.08 and higher which include the ability to add an address to the Smart Antenna's data output. Valid addresses are from 001 to 999. All of the above commands can be used in the Addressing mode however the address of the Smart Antenna must be included in the command immediately the first character of the command, here are some examples:

[Saaa] – Single Tag Report Command

[Daaa] – Duplicate Tag Report Command

[MaaaO] – Start Up Message Off Command

[MaaaN] – Start Up Message Enabled Command

[Baaaxx] – Number of Tag Characters Command

[Waaaddddddd] – Write Tag Data Command

[Maaaxx] – Set Writing Mode Command

[Vaaa] – View Writing Mode Command

[Iaaa] – View Firmware Version and Self Test Command

## [A] - View Current Address

This command allows you to view the Smart Antenna's address.

Host: [A]

Where: A = command

Smart Antenna Response: <LF>aaa<CR>

Where: <LF> = Line Feed  
aaa = address  
<CR> = Carriage Return

### [AaaaN] - Enable Addressing

This command allows you to turn on the addressing function. The current address must be known before addressing can be enabled. The below examples assume Smart Antenna address 001.

Host: [A001N]

Where: A = address command  
001 = address  
N = enable addressing

Smart Antenna Response: <LF>001OK<CR>

Where: <LF> = Line Feed  
001OK = addressing enabled acknowledgement  
<CR> = Carriage Return

### [AaaaO] - Disable Addressing

This command allows you to turn off the addressing function.

Host: [A001O]

Where: A = address command  
001 = address  
O = disable addressing

Smart Antenna Response: <LF>OK<CR>

Where: <LF> = Line Feed  
OK = response acknowledging disable  
<CR> = Carriage Return

### [AaaaNaaa] - Change the Current Address

This command allows you to change the address of a Smart Antenna. The below example assumes address 001 is being changed to 999.

Host: [A001N999]

Where: A = address command  
001 = current address  
N = change addressing  
999 = new address

Smart Antenna Response: <LF>999<CR>



Where: <LF> = Line Feed  
999 = new address acknowledged  
<CR> = Carriage Return

## Troubleshooting

*My Smart Antenna is not responding.*

Re-power the unit. Ensure the LED is on indicating power is applied? If not, check the source of your supply (change AC outlets or power supplies).

*The LED is on but does not blink when a Tag is presented.*

Ensure the Tag is programmed.

*The LED is on and blinks when a Tag is presented but I see no data on my PC.*

Ensure communications are established by re-powering the Smart Antenna and looking for a start up message or simply hitting the return key which should bring the response of a question mark (?). If you do not see these occur, there is an issue with communications not be properly established. Ensure your COM port is addressed correctly if using HyperTerminal.

*When I attempt to program a Tag I receive a "Tag not found" error.*

Ensure the unit is in the correct writing mode depending upon the Tag being used. Most are Mode 18. Enter the command [V] to discover the current mode. Enter [M18] to change to Mode 18. Attempt spacing the Tag a centimeter or so or move smaller Tags around on the Smart Antenna surface.

*The Smart Antenna returns a question mark (?)*

The command you are attempting to enter is not being done so correctly. Ensure you use open square bracket, capital letters, and close square bracket.

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