RFID Console Operation Guide

SensThys RFID Console Configure Readers Read Tags Commission Tags			– 🗆 ×
Reader Name IP Address MAC Ad	dress Active Count	Network Setup RFID Setup GPIO Control App Setup IPv4 Setup IP address automatically Use the following IP address: IP Address: IP Address: IP Address: Subnet mask: IIP Address: IP Address: Subnet mask: IIP Address: IP Address: Subnet mask: IIP IP	ttings Updates Heartbeat Setup Listener IP Address: Port Number: Repeat Interval (sec): Heartbeat Count: Set HB Info
Show Errors Clear Errors	Error Count	Reader Name Name: Set Reader Name Save Current Config Restore Saved Config	Locator Signal Signal Status: Turn Locator On Reboot Reader Reset to Default Config Clear Fields
Selected Device IP Address:	SensArray HW ID:	SensArray FW ID:	S/N

Revision History

Version	Author	Date	Changes
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INTRODUCTION

Congratulations on your purchase of a SensArray reader! The Enterprise and Core offer a suite of features that you can customize through the RFID Console, provided at SensThys.com, to best suit your network environment. This document details all of the features the console has to offer.

Connecting the reader

Once you have your unit, connect it to your computer by plugging a CAT5 or CAT6 ethernet cable from your computer into a power injector, then a second ethernet cable from the injector into your reader. Next, power on the unit by plugging the injector into your power supply and launch the Console application by double-clicking the file named "RFID Console.exe" that has the SensThys logo as the icon.

After powering your SensArray unit and launching the RFID Console, the POE switch or injector commences the hand-shaking procedure with the unit, culminating in the Enterprise or Core being fully powered. Next, the CPU boots up, setting up its power architecture and becoming ready for operation.

During the power up and boot process, the primary status indicator LED will flash red. Once booted, the LED will flash green.



Figure 1: The Enterprise booting up

3



Figure 2: The Enterprise has finished booting and is ready for operation

Once the Console program is up and running, this screen shown in Figure 3 should be visible.

At this point you should connect your Enterprise or Core units to the computer. After a short period of time, less than one minute, the unit(s) will be displayed in the upper left.

Select the unit you wish to operate and control by clicking on that line. The RFID Console will then display IP address, subnet mask, etc.

The Console will display all Enterprise or Core units on the network, populating the Reader list on the left side of the Console.

🌾 SensThys RFID Console		- 🗆 X
Configure Readers Read Tags Commission Tags		SensThys
Reader Name IP Address MAC Address Active Count	Network Setup RFID Setup GPIO Control App Set IPv4 Setup © Obtain IP address automatically O Use the following IP address: IP Address: Subnet mask: Gateway: DNS Server: Sensor Port:	tings Updates Heartbeat Setup Ustener IP Address: Port Number: Repeat Interval (sec): Heartbeat Count:
Clear Reader List	Set IPv4 Info	Set HB Info
~	Reader Name Name: Set Reader Name	Locator Signal Signal Status: Tum Locator On Reboot Reader
Show Errors Clear Errors Error Count	Save Current Config Restore Saved Config	Reset to Default Config Clear Fields
Selected Device IP Address: SensArray HW ID:	SensArray FW ID:	5/N

Figure 3: The main screen of the RFID Console

쓪 SensThys RFID	Console			- 🗆 X
Configure Readers	Read Tags Commis	sion Tags		SensThys
Reader Name	IP Address 192.168.1.200	MAC Address 54:10.ec:d5:3b:81	Active Count 3	Network Setup RFID Setup GPIO Control App Settings Updates IPv4 Setup IPv4 Setup IPv4 Setup IIPv4 Setup Iistener IP Address: 255.255.255.255.255.255.255.255.255.255
	Clear Rea	ader List		Set IPv4 Info
Reading Sensor Se No errors logged.	tup for 192.168.1.200		^	Reader Name Locator Signal Name: SensArray Set Reader Name Tum Locator On
Show Errors	Clear Errors	Error C	Count 0	Reboot Reader Save Current Config Restore Saved Config Reset to Default Config Clear Fields
Selected Device IP	Address: 192.16	58.1.200 SensArra	y HW ID:	V1.0.3 SensArray FW ID: V1.0.5 S/N 000243

Figure 4: After selecting the unit, the RFID Console shows the network setup for that unit.

Configure Readers	Read Tags	Commission Tags	Advanced Settings		
Reader Name		IP Address	MAC Address	Up Time	Active Count
SensArray En	terprise	192.168.1.118	04:91:62:81:1	4.18:5	82777
SensX Reader		192.168.1.157	00:1f:7b:73:1c:67	4.18:31:51	80296
SensX Reader		192.168.1.158	00:1f:7b:73:1c:68	4.18:33:24	80332
SensX Reader		192.168.1.104	00:1f:7b:73:1c:32	4.18:33:15	80334
SensArray		192.168.1.58	04:91:62:81:14:7e	00:02:30	26
SensArray Co	re	192.168.1.165	80:1f:12:21:bb	00:00:20	5
					-

Figure 5: Showing the color scheme. A normal font means that the reader is not connected. Green shows readers connected to the Console. Red shows readers connected to another application. Black shows the connected reader selected for configuration.

CONFIGURE READERS

Under the Configure Readers tab, there are 4 main sections that allow for tweaking basic settings of the reader itself. The following sections go into detail about these features.

Network Setup

The Network Setup tab has settings that allow for customization of how your reader will be detected in your network configuration. In "IPv4 Setup" you can obtain the IP Address for your reader automatically, or set the IP Address yourself by entering the IP Address, subnet mask, DNS gateway, DNS Server, and port you would like to use and clicking the "Set IPv4 Info" button. In "Reader Name", you can set a customized name for the reader so that you can make the reader more easily identifiable. Type a name into the box next to "Name:" and click the "Set Reader Name" button. In "Heartbeat Setup", you can set the target IP address and port that you want to send a heartbeat to by typing in the boxes next to "Listener IP Address" and "Port Number". You can also set the interval, in seconds, at which you want to send a heartbeat by typing in the box next to "Repeat Interval (sec)". Clicking the "Set HB Info" button will save this information.

SensThys RFID Console		and a state of the	
Configure Readers Read Tags Reader Name SensArray	Commission Tags Advanced Settings IP Address MAC Address 169.254.49.1 54:10:ec:d5:c	Up Time Active Count 00:35:06 687	Sensor Network Setup EPIC RFID Setup GPIO Control Updates IPv4 Setup IPv4 Setup IPv4 Setup IPv4 Setup Isterner IP Address: 255 255 255 255 255 255 255 255 255 255
Clear Notifications succeeded	Clear Reader List	A v	Reader Name Name: SensArray Set Reader Name
Show Notifi IP Address: 169.254.49.11	Clear Noti 1 Model Number: SP13350	ications: 21	Save Current Config Restore Saved Config Reset to Default Config 1 S/N 000644

Figure 6: The Network Setup tab in the Console

EPIC

RFID Setup

The RFID Setup tab has settings that offer customization of RFID features on your reader.

Power

This tab lets you set the power, in dBm, that the antennas on your reader use by selecting a number from a drop-down menu next to the desired antenna. The default is 30.

🞸 SensThys RFID Console	No. bestere					
Configure Readers Read Tags (Commission Tags Advanced Settings					EPIC
Reader Name	IP Address MAC Address	Up Time Active Count	Sensor Network Setup	EPIC RFID Setup GP	IO Control Updates	
SensArray	169.254.49.1 54:10:ec:d5:c	00:38:42 759	RF Module IDs Build:	V3.1.14	Module Number: 1847100108	
			Power Antenna Sequ	uencing RF Mode Gen. Internal	P(rd): 30.0	
				Antenna 1	P(rd): 30.0	
				Antenna 2	P(rd): 30.0	
				Antenna 3	P(rd): 30.0	
Clear Notifications succeeded	Clear Reader List	*		Update P	ower Settings	
			Internal	Antenna 1	Antenna 2	Antenna 3
Show Notificat	tions Clear Noti	fications: 21	Save Cu	urrent Config Restore	Saved Config Reset to Defaul	t Config
IP Address: 169.254.49.111	Model Number: SP13350	Build #: B.20.12.18.01	S/N 000644			

Figure 7: The Power tab in the Console

Antenna Sequencing

This tab has options that allow for changing the order in which antennas are used and which antennas are used. Antenna Dwell Time is the amount of time, in milliseconds, that an antenna spends reading tags before moving on to the next antenna in the sequence. The default dwell time is 500. # of Antennas per Seq. Cycle is the number of antennas that are used during a sequence of tag reads. Select the desired number of antennas in a drop-down menu next to "# of Antennas per Seq. Cycle", which then brings up additional drop-down menus that allow you to select the antennas you would like to use.

Below the box containing these settings are four colored boxes. These boxes indicate whether an antenna is connected or not and if it is being used. Green means the antenna is connected to that port. Grey means no antenna is connected. A box fully colored in green means the antenna is

connected and is active in the sequence. Red means no antenna is connected to the port but it is active in the sequence.

🎸 SensThys RFID Console	-					-			
Configure Readers Read Tags	Commission Tags	Advanced Settings							EPIC
Reader Name	IP Address	MAC Address	Up Time	Active Count	Sensor Network	Setup EPIC	RFID Setup GPIC	O Control Updates	
SensArray	169.254.49.1	54:10:ec:d5:c	00:40:15	790	RF Module I Power Ante	Ds Build: V3.1 enna Sequencing	.14 9 RF Mode Gen2	Module Number: 1847100	108
							Antenna Dwell Ti # of Antennas per S	ime (ms) 500 Geq. Cycle 1 ▼	
Clear Notifications succeeded	Clear Rez	ider List		•			Update Se	equence Setup	
				÷	Internal		Antenna 1	Antenna 2	Antenna 3
Show Notific	cations Cle	ar Noti	fications: 21	0.00.10.00.00		Save Current C	Config Restore S	Saved Config Reset to [Default Config
IP Address: 169.254.49.11	1 Model Numb	er: SP13350	Build #:	B.20.12.18.0	L S/N 0	00644			

Figure 8: The Antenna Sequencing tab in the Console

RF Mode

This tab allows for configuring the style of RFID that the reader uses when reading tags. This is done by selecting an option from a drop-down menu next to "RF Mode". There are 3 options available. "Sensitive" mode has the reader read tags carefully. "Fast" mode has the reader read tags in a rapid manner. "Expresso" changes the speed of the tag reads depending on the amount of tags being read. Selecting the Expresso option opens a "Estimated Tag Population" box where you can set the expected amount of tags that are to be read.

🗲 SensThys RFID Console	-	jaan kang 🙆		- 8	
Configure Readers Read Tags	Commission Tags	Advanced Settings			EPIC
Reader Name	IP Address	MAC Address	Up Time	Active Count	Sensor Network Setup EPIC RFID Setup GPIO Control Updates
SensArray	169.254.49.1	54:10:ec:d5:c	00:43:03	846	RF Module IDs Build: V3.1.14 Module Number: 1847100108 Power Antenna Sequencing RF Mode Gen2 Settings RF Mode: Sensitive Estimated Tag Population: 0
Clear Notifications succeeded	Clear Re	ader List			Set RF Mode
Show Notifica	ations	ear Noti	ications: 21	Ŧ	Internal Antenna 1 Antenna 2 Antenna 3
IP Address: 169.254.49.111	Model Num	ber: SP13350	Build #:	B.20.12.18.0	01 S/N 000644

Figure 9: The RF Mode tab in the Console

Gen2 Settings

This tab has more technical settings that allow for customizing how tags are detected. In "Q" you can set the algorithm that the reader uses for detecting tags by selecting one of two options from a drop-down menu next to "Algorithm".

For general operation, we recommend Dynamic Q, minimum Q of 0, maximum of 15, and starting Q of 3.

Only advanced user should alter this setting.

In "Select Parameters", the session during which tags are selected can be set by choosing S0, S1, S2, or S3 from a drop-down menu next to "Target". In "Query Parameters", the session during which queries are sent can be set by selecting the desired session from a drop-down menu next to "Session". Next is the "Query Target" box. Here, the drop-down menu next to this box has two options named "A" and "B". These options refer to two states tags can be in when they are being processed.

eader Name	IP Address	MAC Address	Up Time	Active Count	Sensor Network Se	tup EPIC	RFID Setup (GPIO Control	Updates		
SensArray	169.254.49.1	54:10:ec:d5:c	00:45:24	893	RF Module IDs	Build: V3.1.1	14	Module	e Number: 1847100	108	
					Power Antenn	a Sequencing	RF Mode G	ien2 Settings Parameters	Query Pa	rameters	
					Algorithm:	Dynamic Q	▼ Target:	S1 (001)	✓ Session:	S1 (01) 👻	
					Start Q:	3	 Action: 	000	 Query Target 	Dual 🔻	
					Min Q:	0	•		Sel:	ALL (00) 🔻	
					Max Q:	15	•				
	Clear Rea	ider List									
ar Notifications succeed	led			*			Set	Gen2 Params	3		
					Internal		Antenna 1		Antenna 2	Antenna	3

Figure 10: The Gen2 Settings tab in the Console

GPIO Control

The GPIO Control tab has settings that allow for customization of the General Purpose Inpout Output (GPIO) ports on your reader. In "24V Output", you can set the output to activate upon starting up the console by checking the "Activate on Startup" box or set it to be active only when you want it to by clicking the "24V Active" box. In "GP Inputs" and "GP Outputs", you can set which input and output ports you would like to use by checking the boxes for the ports you want to use. For more detailed information on how to use GPIO, read the GPIO Deployment Guide at the following link:

GPIO Deployment Guide

SensThys RFID Console							_ = X
Configure Readers Read Tags	Commission Tags Advanced Settin] \$					EPIC
Reader Name	IP Address MAC Address 169.254.49.1 54:10:ec:d5:c	Up Time Activ	e Count Sensor	Network Setup EPIC	RFID Setup GPIO Control	Updates	
				24V Output 24V Active Activate on Startu	GP Inputs	GP Outputs	
	Cear Reader List			Update 24V	GPI	4 GPO-3 Update GPOs]
			×				
IP Address: 169.254.49.11	Clear 1 Model Number: SP13350	Notifications: Build #: B.	20.11.13.01 S/N	Save Current C	Restore Saved Co	nfig Reset to Default Co	nfig

Figure 11: The GPIO Control tab in the Console

Updates

The Update tab lets you update the firmware of the console if an update is needed. Click the "Browse" button, find the update file, provided by SensThys, and click the "Update" button.

🎸 SensThys RFID Console	Annual State And	2 hard	X
Configure Readers Read Tags Commission Tags A	dvanced Settings		EPIC
Reader Name IP Address	MAC Address Up Time	Active Count	Sensor Network Setup EPIC RFID Setup GPIO Control Updates
Clear Read	54:10.ec.d5.ca:2b 00:00:05	2	Update Configuration File: C:\Users\DeEtte\Documenta\Fimware PRO\SAPro_Updates_21.01.12\SAPro_ Checking configuration file OK Starting update Step 1 of 3. Updating bootloader. Programming BOOTLOADER update step complete Step 2 of 3. Updating application. Programming Fimware verified. Restarting APPLICATION update step complete Step 3 of 3. Updating bootstrap. Programming BOOTSTAPF update step complete Rebooting
Show Notifications Clear	Notifications: 32		Save Current Config Restore Saved Config Reset to Default Config
IP Address: 169.254.49.111 Model Numbe	r: SP13350 Build #:	B.20.12.18.01	S/N 000644

Figure 12: The Updates tab in the Console. Shown is sample run of a typical update.

READ TAGS

The Read Tags tab is where the magic occurs within the console. It is here that you can read tags by using the readers in your network. Place an RFID tag, or tags, in front of the unit, and click the "Read" button. Once the desired amount of tag reads have been performed, press the "Stop" button to stop tags from being read. A list will then appear showing the antenna and reader the tag was read on under "Rdr #" and "Ant #" respectively, the EPC of the tag under "EPC", the RSSI (Return Signal Strength Indicator) of the tag under "RSSI", and the number of times the tag has been read under "Count". Clicking the "Clear Tag List" button will erase the read tags from the list.

	Ant.#	EPC	RSSI	Count	Unique	First Read Time	Last Read Time	Errors	Notifications
		Total Bead		432	4	0			Tag Read Started
	Int	Antenna Total		432	4				Tag Read Stopping
	Int	30-00-E2-00-42-02-92-00-60-15-00-93-DB-40	-65.9	111		14:43:28.757	14:43:31.619		Tag Read Stopped.
	Int	30-00-E2-00-42-02-D4-20-60-15-00-93-DF-62	-61.8	115		14:43:28.803	14:43:31.649		
	Int	30-00-E2-00-42-02-D5-30-60-15-00-93-DF-73	-65.9	92		14:43:28.804	14:43:31.622		
	Int	30-00-E2-00-42-02-D6-30-60-15-00-93-DF-83	-61.8	114		14:43:28.803	14:43:31.649		
									Clear Notifications
									EPIC Multi-Select Display Options Read Opti
									East TID Active
									rast ID Active
									Include Reader Timestamp
_									-1
or Co	ont. Read	169.254.49.111				Stop After (s): 0	Read Ti	me (s): 2	
	er Dwell T	ime (ms): 5000	tart Con	current Rea	d	Read	Clear Ta	a List	
eade									

Figure 13: Sample run of tag reads after pressing the "Read" button

Concurrent Read

Next to the Read Tags button is the Concurrent Read button. There are two ways tags can be read in the console. The method described previously is a sequential read, where tags are read one reader at a time before moving to the next reader in the network after a set amount of time. Concurrent Read allows for reading tags on all of the readers in the network at once. If such a method is desired, click the Concurrent Read button.

In the bottom right corner of the Read Tags tab are 4 settings that allow for customizing how tags are read.

EPIC

EPIC is a form of error correction pioneered by SensThys in order to prevent data loss from tags that can occur due to interference from other devices or data being lost over transmission. The way this is done is by encoding the data for error correction and then encrypting the desired tags with a key that is given to the user, which is then input into the console in the space next to the Browse Button, loading the key by pressing the "Load Customer Key" button, then using the key by checking the "Decode on Console" box



Figure 14: The EPIC tab in the Console

Multi-Select

This tab has settings that allow for customization of the sequence at which tags are read. At the bottom, there 3 options to choose from. Std. Mode, which is the default, has tags selected (displayed on the list on the left of the screen) and read at the same time. Sel b4 Rd has tags selected before its contents are read. Rd b4 Sel has the contents of a tag read before it is selected. If "Rd b4 Sel" or "Sel b4 Rd" is selected, three additional options are available. "Number of Selects" is the number of times a tag is selected before a new cycle, or set of tag reads, is started. "Number of Cycles to Execute", is the number of cycles the reader will execute before moving on to the next antenna that is enabled. All of these options can be customized by entering a number into a drop-down menu next to each of these three options.

EPIC Multi-Select Disp	lay Options Read Options
Number of Selects pe	er Cycle: 4
Number of Cycles to E	Execute: 2
Interval between Cycle	es (ms): 150 🚊
◉ Std Mode 💿 Se	el b4 Rd 💿 Rd b4 Sel

Figure 15: The Multi-Select tab in the Console

Display Options

This tab has settings that allow for toggling what information is shown on the list when tags are read. Checking the "Auto-Clear Tag List" box will automatically clear the tags in the list after all of the tag reads on a network are completed. Checking the "Detailed View" box updates the amount of reads for each tag as they are being read. Checking the "Display XPC1" box shows the XPC1 number, in the form of the two two-digit numbers separated by a dash, for each tag. Checking the "Display PC w/ EPC Data" box shows the PC number, in the form of two two-digit hexadecimal numbers separated by a dash, in front of the EPC number associated with the tag.



Figure 16: The Display Options tab in the Console

Read Options

This tab has additional settings regarding tag reads. Checking the "FastTID Active" box enables a functionality for certain Impinj die that allows the TID and EPC to be read at the same time. Checking the "Include Reader Timestamp" box provides a timestamp from the reader for each tag read.



Figure 17: The Read Options tab in the Console

COMMISSION TAGS

Next to the Read Tags tab is the Commission Tags tab. The settings provided on this tab allow for keeping track of tags and creating new tags.

Configure Readers Read Tags Commission Tags Advanced Settings					
Commissioning Station Setup Read Power Level: 20 dBm	Commission Tag Authenticating Access Password: 00000000 User Data Offset (hex): 0 Tag Identifier: F200 [[3811] [6000 [6015] [0093] [DF83]				
Write Power Level: 20	Write Tag Data				
E2-00-42-02-D5-30-60-15-00-93-DF-73 E2-00-42-02-D6-30-60-15-00-93-DF-83	Access Password (h): 00000000				
۲	EPC PC Word (h): 3000 EPC (h): E200 4202 D630 6015 0093 DF83				
Reading targetted tag data	User Data (h): 0000 0000 0000 0000 0000 0000 0000 0				
EPC Checksum: GADC					
IP Address: 169.254.49.111 Model Number: SP13350 Build #: B.20.12.18.01 S/N 000644					

Figure 18: The Commission Tags tab in the Console

Commissioning Station Setup

In this section, you can set the power level, in dBm, for reading and writing tags. You can also choose from a drop-down menu whether you would like to use the reader's internal antenna or one of several external antennas to pick up tags.

Inventory

The inventory is a list of tags that were picked up by the antenna you have selected in Commissioning Station Setup. To get this list, select the desired antenna and press the "Inventory Tags" button

Commission Tag

This section shows you the identification number, in hexadecimal, that the tag uses to identify itself, and has several settings in the "Write Tag Data" box that allows you to add extra security measures to and modify the tag if the situation calls for it. You can set an access password that will then be required to be entered if that tag needs to be accessed, and a kill password that will make the tag be unreadable if entered in case of a situation where you would want the tag to no longer be readable and discarded. Both the kill and access passwords are all 0s by default. User Data at the bottom of the "Write Tag Data" box is a string of eight 4-digit hexadecimal words that the reader uses to pick up the tag the User Data is associated with. Changing this value will create a new tag that uses the new User Data you have created as its User Data. At the bottom is an EPC Checksum, a 4-digit hexadecimal number that the tag uses to check for errors on the receiving end.

ADVANCED

The Advanced tab includes more technical settings that allow for fine-tuning your reader for use in special environments such as environments with high temperatures or a high amount of noise.

Features

First is the Features tab.

The "Current Reader Date & Time" section lets you set the date and time on the reader to the current date and time by pressing the "Set Reader Date/Time" button. The date and time is random by default.

In "Reader Configuration", pressing the "Get Reader Config" button will give you the number of antennas, number of ethernet ports, and number of general purpose inputs and outputs of your reader. It will also point out if your unit allows for DC input or not.

In "Inventory Filter", you can set a mask, in sets of 4 hexadecimal digits, so that the reader only picks up tags that include the hexadecimal digits from the mask. The "Mask Start Bit Address" box lets you choose the starting point in your mask where the hexadecimal digits within the mask are used for comparison against tags received by your reader, and the "Mask Length (# of bits)" box lets you choose the length, in bits, of the mask that you want to use for filtering.

Lastly, the "EPIC Mode Setting" box lets you choose the style of error detection that you want to use by choosing the style you want from a drop-down menu and clicking the "Set EPIC Mode" button. The default value for this option is "Pass/Send (Std Mode)".

🎸 SensThys RFID Console		_ 🗆 X
Configure Readers Read Tage Commission Tage Advan	ref Setting	EPIC
Computer reduced regaring commeasurings		
Get Region Setting succeeded	atures Performance AutoSens	
Retrieved unexpected Frequency Hop Time:	Current Reader Date & Time	
3900 Reader Date/Time = 2019-01-06T05:58:07 Connection string: 169:254:12:242:10001	Current Setting: 2019-01-06 05:58:07 Set Reader Date /Time	
AutoSens Program => i.m.0.0.0.0.r.b.0.0.0.0	Reader Configuration EPIC Mode Setting	
	Number of Antennas: EPIC Mode Pass/Send (Std Mode) 💌	
	Number of Ethemet Ports:	
	Number of GPIs: Set EPIC Mode	
	Number of GPDs:	
	Lie DC level	
	Has bC input.	
	Get Reader Config	
	Inventory Filter	
	Maak Bank: Clear Maak 👻	
	Mask Start Bit Address: 0 Mask Length (# of bits):	
	Mask (4 Hex digts per box):	
~		
Clear Message List	Many of the features present on the Advanced tab are made available for fine-tuning in special environments and for leading that have a need for capabilities that are in development. Please be advised that some settings may put the reader in a state read tags. If this should happen 30 ob the Configure Readers tab. Cick's the tubutor Reset to Deall/Config. Then power cycle	-edge users where it won't your reader.
IP Address: 169.254.49.111 Model Number:	SP13350 Build #: B20.11.13.01 S/N	

Figure 19: The Features tab in the Console

Performance

Next is the Performance tab.

In "DRM", Dense Reader Mode can be toggled on or off by pressing the button below the text showing if DRM is on or not. Dense Reader Mode is a setting that minimizes interference from other readers in your network while tags are being read. If DRM is off, the reader is more

sensitive to tags at the expense of being more susceptible to noise in the environment that can affect tag reads. if DRM is on, the reader is less sensitive to noise in the environment at the expense of being less sensitive to tags. DRM is set to On by default.

Frequency Hop Time is the interval, in milliseconds, at which the console waits before switching frequencies. The desired hop time can be selected by a drop-down menu next to "Frequency Hop Time", starting at 50 and going in increments of doubles up to a maximum of 400. The hop time is 400 by default.

figure Readers Read Tags Commission Tags Advanced Settings	EPI
bit Region Catego parcended momenty factor line: 5300 Brateweet unexpected Frequency (hot line: 5300 metricine – o 100 040705 580 17 Domestion eting: 163 264 13 262 10001 Lato Simo Program ⇒ J im 0.0.0.0 /b 0.0.0.0	DRM DRM is On Tum DRM of Tequency Hop Time Frequency Hop Time Set Hop Time Hiventory Select Stup Mode: No Pre-Selects: Youre Set Select Pre-Selects: Youre
Many of the features preser Many of the features preser that have a need for capabil read tags. If this should hap	t on the Advanced tab are made available for fine-tuning in special environments and for leading-edge users ties that are in development. Please be advised that scores settings may put the reader in a state where it wort eng, po to the Configure Readers the Jickk the butter Theset to Deduc Config' time power cycle your reader.

Figure 20: The Performance tab in the Console

AutoSens

Lastly is the AutoSens tab. AutoSens is a scripting language that is used to create programs that allow readers to run automatically without input from the user, and this tab lets you adjust settings related to AutoSens.

In "Data Delivery Connection", you can set the IP address and port where you connect the reader to process data by entering the IP address you want into the "IP Address" box, entering the port you want into the "Port #" box, and pressing the "Set Connection Info" button. The default values are "169.254.13.242" for the IP address and "10001" for the port number.

In "Macro Program", you can create a set of instructions that dictates how the reader acts when AutoSens is running. By default, the program contains the lines " i,m,0,0,0,0;" and "r,b,0,0,0,0;". It should be noted that programs input into this box need to have commas between the letters and numbers for the reader to function properly. If a reader has been programmed with an AutoSens program different than what is shown in the Macro Program box, tags will not be seen by the console.

In "AutoSens Control", pressing the "Start AutoSens" button will initiate AutoSens, while pressing the "Stop/Pause AutoSens" button will pause or stop AutoSens. There is a drop-down selection under "AutoSens Pause Interval (min.)", which lets you select the interval, in minutes, between pauses of AutoSens.

figure Readers Read Tags Commission Tags Advanced	Settings	EPR
Bet Region Setting succeeded Feature requency Hop Time: 3900 Feature solar bate/Time = 2019-01-06T05:58:07 Formetion string: 169.254.13.242.10001 uto Sens Program => 1,m,0,0,0,7,b,0,0,0 Image: Solar bate/Time = 2019-01-06T05.58.07	Performance AutoSens Data Delivery Connection IP Address: 169 254.13.242 Set Connectio	Pot #: 10001
	Macro Program i.m. 0.0.0.0; r.b. 0.0.0;	Startup State
		Startup State Set AutoSens Startup State
	Set AutoSens Macro Program	
	Start AutoSens Stop/Pause AutoSens	AutoSens Pause Interval (min.): Don't automatically resume
Clear Message List	any of the features present on the Advanced tab are made available for fit t have a need for capabilities that are in development. Please be advised ad taos. If this should happen, go to the Configure Readers tab. click the	ne-tuning in special environments and for leading-edge users I that some settings may put the reader in a state where it won't button "Reset to Default Confin" then nower orde your reader

Figure 21: The AutoSens tab in the Console

SETTINGS

The Settings tab lets you choose where data is saved after tags are read. You can choose to not record any reads by checking the "Recording Off" bullet, record only the first round of tag reads by selecting the "Record First Reads Only" bullet, or record all the tag reads obtained by selecting the "Record All Tag Reads" bullet. The file is saved in the ".csv" format.

Checking the "Clear Readers Not Sending Heartbeat" button clears readers from the recording file that are not sending a heartbeat to the console.

Clicking the "Save Console Settings" button saves the previously mentioned settings.

SensThys RFID Console	
Configure Readers Read Tags Commission Tags Advanced Settings	EPIC
Wetsto File Aurus	
Save To File	
Folder to save tag data in: Browse	
Filename: TagData _YYYMMDD_HHMMSS.csv	
Recording Off Record First Reads Only Record All Tag Reads	
Clear Readers Not Sending Heartbeat	
Save Console Settings Default Console Settings	
IP Address: 169.254.49.111 Model Number: SP13350 Build ≠: B.20.11.13.01 S/N	

Figure 22: The Settings tab in the Console